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ABSTRACT

The guide is intended for special education or regular class teachers of educable mentally handicapped children. A general introduction discusses such children, guiding principles, educational needs, discipline problems, class organization, and direct learning opportunities. A more specific section details curriculum adjustment, planning, communication skills (including social objectives, oral and written communication, handwriting, spelling, reading, phonics, and various inventories and outlines), and computational skills (the concrete to the abstract, goals, guiding principles, problem solving, readiness program, informational and functional arithmetic, measures, vocabulary). Appendixes refer to direct learning materials and how to select and develop a unit. (KW)

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A Resource Guide For Special Education Teachers

Office of Instructional Services

STATE OF HAWAII
DEPARTMENT OF EDUCATION
SPECIAL SERVICES BRANCH
AUGUST, 1968

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ERRATA

A RESOURCE GUIDE FOR THE SPECIAL EDUCATION TEACHER

Page	Paragraph	Line	Words to be Corrected	Correction to Read
Ltr. to Teacher	~~4th~~ 3rd	Last	our	are
13	2nd	b. 8th	of	for
13			9 years 10 years	9 years 12 years
14	1st	14th	his 9 years	his 8 years
14	1st	15th	at 9 years old	at 8 years old
15	3.	1st	range from to in reading	range from ___ to ___ in reading
32	4th	4th	pp. 58-59	pp. 59-60
35	1st	1.	needs to native birds	needs of native birds
46	Written Forms	3rd	pp. 71-73	pp. 40-50
48	Memoranda	1st	recipes and direction	recipes and directions
48	Memoranda	Item #5	| | |x|	| |x|x|
68	2nd	5th	becuse	because
68	4th	5th	He now has	He now has
94	1st	Top	are saying but also sees	are saying and also sees
94	Sub-topic -- The Beginner		Who is 9 to 12 Years	Who is 10 to 12 Years
114	3rd	8th	on pages	on pages 109-110
128	last	last 2 sentences	should be in brackets	(𝍸 is intended here)
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159	Clock 6.	2nd	5 steps in reading and commercial way	5 steps in reading the clock the commercial way
163	Level II	See bundles of sticks	5 10 20 15 25	5 10 15 20 25
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GROWING UP IN A DEMOCRACY

A RESOURCE GUIDE FOR THE SPECIAL EDUCATION TEACHER

Working with the "Mentally Retarded Educable" Child

*****

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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Mrs. Alice Wygant was one of the members of the U.S. Office of Education Committee which developed "A Guide to Curriculum Adjustment for Mentally Retarded Children." She has been a teacher, supervisor, and college instructor in Maryland, served as Field Assistant at the Resource Center on Oahu and worked on a special project at the University of Hawaii. Although she has been retired from the Department of Education, she continues to spend many hours tutoring retarded children, volunteers her services to children in Waimano Training School and attends training institutes, workshops, and conferences.

Mrs. Wygant's dedication to education is reflected in all of her guides and has earned the respect of educators throughout the country with her first guide, "Teaching the Slow Learner."

The State Department of Education expresses its deep appreciation for the untiring effort, hours, and interest she has devoted to revising her guide.

f H A Waters
Ralph H. Kiyosaki
Superintendent of Education

FOREWORD

Every child regardless of his ability has a right to an opportunity to acquire the basic tools of learning. "Growing Up in a Democracy" is a revision of "Teaching the Slow Learner" which has been an official teacher's guide for special education classes since 1946. The 1968 revision attempts to meet the changing needs of Hawaii's children in the public schools. Teachers who are in special education and teachers in regular classes who have handicapped children will find this guide a valuable resource in planning their work.

Hatsuko F. Kawahara

Hatsuko F. Kawahara, Director
Special Education Branch

Arthur F. Mann

Arthur F. Mann
Assistant Superintendent
Office of Instructional Services

Dear Teachers:

When Dr. Kawahara asked me to update my 1946 ''Guidebook for the Slow Learner's Teacher'', it was obvious that the term ''slow learner'' must be changed to the one now in common use -- ''Mentally Retarded Educable'' (I.Q. 50-75). This term appears in quotes here and throughout the book because I am sure psychologists and educators will very soon arrive at a more precise and less discriminatory name for this kind of handicap.

The emphasis throughout this edition, as in 1946, is on Social Learnings. The chart attached to the back cover outlines social learnings that will contribute to the child's on-going development toward social competency in adult life. It points up the need for continuity in social learnings throughout the child's entire school life.

Because the child's social and academic progress is so dependent upon replacing the habit of failure with success, you will note that; inventories, careful pacing of each new learning step, sequence in building new skills, and guidance in making generalizations our outlined in detail.

The ideas, materials, and methods described here represent ways and means developed over a period of years, and used successfully with many children. In sharing them with you, I am aware that these are not the only ways and means that will prove successful. Use them, adapt them, and share with others whatever you learn about how children learn.

Aloha and Mahalo,

Alice W. Wygant

THE TEACHER

A Philosopher comes into the room
  and listens to the talk of little children.
He is faithful in the care and guidance
  of that which is another man's mind and soul.
He who builds character as a career
  should not count the cost of his faith in humanity
  and estimate if he have sufficient love
  to complete the structure
For the poor shall crowd every classroom
  the poor in mind and anemic in character.
But he shall say to those about him
  "How many loaves have ye?"
One child shall have the gift of music
  and another the blending of colors.
Some boy shall have hands adept with tools
  and some girl the arranging of flowers.
Many a sense of humor and a few
  the potential power of academic research.
The seeds of ability shall be blessed with his wisdom
  and the whole group shall share
  in the abundance of bread.

--Alice C. Heap

CONTENTS

PART I

PAGE

THE "MENTALLY RETARDED EDUCABLE" CHILD: WHO IS HE? 1

GUIDING PRINCIPLES FOR HIS EDUCATION 2

WHAT LEARNINGS ARE OF FIRST IMPORTANCE TO HIM? 4

WHY IS HE SO OFTEN A DISCIPLINE PROBLEM? 6

WHERE SHALL I BEGIN WITH THE NEW CHILD IN MY CLASS? 11

HOW SHALL I ORGANIZE MY CLASS FOR TEACHING? 17

HANDWORK CREATES DIRECT-LEARNING OPPORTUNITIES 21

PART II

DIRECT-LEARNING DEMANDS CURRICULUM ADJUSTMENT 26

GROWING UP IN A DEMOCRACY 28

THE INVENTORY: AN AID IN PLANNING 29

SOCIAL OBJECTIVES IN CURRENT EVENTS, SOCIAL STUDIES AND SCIENCE 32

SOCIAL OBJECTIVES IN ORAL AND WRITTEN COMMUNICATION 38

AN ORAL COMMUNICATION INVENTORY 40

OUTLINE IN TERMS OF GROWTH IN ABILITY TO COMMUNICATE VERBALLY 41

THE WRITTEN COMMUNICATION INVENTORY 46

OUTLINE IN TERMS OF GROWTH IN ABILITY TO COMMUNICATE IN WRITING 48

HANDWRITING AND SPELLING: TOOLS FOR WRITTEN COMMUNICATION . . 52
Spelling Lists (53), The Spelling Inventory (56), Planning and Grouping (58), Picture Writing (60), A Spelling Method (61)

READING: CAN HE LEARN TO READ? 66

A READING INVENTORY 69

DEVELOP A READING PROGRAM FOR EVERY CHILD 72
Before He Is Ready for Books (72), The Child Who Is Now Ready for Books (79), The Young Child (80), The Older Child (85), The Discouraged Child (88)

PROGRESS BEYOND A BEGINNING READING LEVEL 91

HIGH INTEREST--LOW DIFFICULTY READING MATERIAL 93

PHONICS: A TOOL FOR SPELLING AND READING 101
Inventory (101), Simplified (102), Guides for Teaching Remedial Phonics (105)

ARITHMETIC: SIX STEPS IN MAKING THE TRANSFER FROM THE CONCRETE TO THE ABSTRACT SYMBOL 106

ARITHMETIC EXPERIENCES PROVIDE DIRECT-LEARNING 107

ARITHMETIC GOALS 109

GUIDING PRINCIPLES IN TEACHING ARITHMETIC 111

COMPUTATIONAL SKILLS GROW OUT OF PROBLEM SOLVING 114

AN ARITHMETIC READINESS PROGRAM FOR THE CHILD BELOW SIX YEAR M.A. 117
Readiness Experiences That Build Foundations for Understanding Numbers (119), Group Concepts Combining Two Small Groups (122), Separating Two Small Groups (123)

INFORMATIONAL ARITHMETIC 124
Readiness and Vocabulary Experiences (180)

FUNCTIONAL ARITHMETIC FOR THE BEGINNER 127

ARITHMETIC: FOR THE CHILD WHO IS READY FOR ABSTRACT SYMBOLS . . . 132

LEARNING TO USE MEASURES 139

A FUNCTIONAL ARITHMETIC VOCABULARY 149

SOME REMINDERS TO THE TEACHERS OF THE 3 R's 154

NON-ACADEMIC EXPERIENCES 155

APPENDIX A - DIRECT-LEARNING MATERIALS. 157

DIRECT-LEARNING DEVICES FOR BEGINNING ARITHMETIC 160

APPENDIX B - SELECTION AND DEVELOPMENT OF A UNIT 165

SELECTED REFERENCES 168
General (168), Reading (170), Arithmetic (171), Recreation, Physical Education, Audio-Visual and Teaching Aids (172)

A CITIZENSHIP CHART "GROWING UP IN A DEMOCRACY" . . . . (An Insert)

PART I

"MENTALLY RETARDED EDUCABLE" CHILD: WHO IS HE?

He is the child who in the first grade was unable to make a beginning in the academic skill of reading, his speaking vocabulary was limited, his number concepts were few or lacking, his motor coordination may have been too poor to permit him to learn to write, he was probably socially and emotionally immature.

He is the child who has progressed from grade to grade with classmates of his own age, accumulating retardation in academic subjects, wanting to join them in all their games and social activities, listening in on their academic subjects, gleaning crumbs of information here and there but steadily becoming less and less able to join them in their thinking because of his accumulating retardation. He becomes a child well acquainted with failure and the longer his human need for success goes unrecognized in the classroom the more permanent the damage to his personality will become.

This child looks like others of his class. He is often as good and sometimes better at music, shop, garden and games. He is, however, a child who, having certain limitations as to ability to assimilate academic skills, must be taught by direct-learning methods.

This "DIRECT-LEARNER" learns best by seeing, handling and manipulating things. He is interested chiefly in things. His interest is keen only when he is actively participating in first-hand experiences. The books, blackboards and chalk of the usual classroom hold no interest for him. Since all children learn best through DIRECT LEARNING experiences, the "mentally retarded educable" child differs from other children only in the degree to which he depends upon DIRECT LEARNING.

He Is Not a Different Kind of Child

He is more like the "normal" child than he is different.

He is about as big as the "normal" child of his age.

He is interested in the same kind of things as other children of his age.

He "senses" approval or disapproval, contempt or appreciation, trust or suspicion in one's tone of voice or manner as readily as the "normal" child does.

He is subject to any physical disability that a "normal" child might also have.

He, in common with the "normal" child, might possibly have a specific disability in reading, arithmetic or spelling.

In common with "normal" children he may have great ability or no ability at all in such subjects as Art, Music, Athletics, Wood Craft, etc.

His real point of difference with the "normal" child is his rate of mental development.

The lower the child's I.Q., the more evident is the degree of difference between himself and a "normal" child. The nearer the I.Q. approaches the norm, the less difference we find.

However, when we compare him with a "normal" child of the same mental age, we note that though he is older and so has had more years of life experience, he is apt to be:

less alert than the "normal" child.
less observant than the "normal" child.
less able to associate ideas, and so to form new concepts or to make generalizations.
less apt to apply self-criticism.
less able to form valid judgments and to act upon them.
less confident and self-reliant.
less ready to adjust comfortably and happily to new situations.

As a result we find him more dependent upon:

1. Guidance in exploring his own and other environments.
   He needs the handling, seeing, doing, going activities of first hand experiences for forming new concepts.
   He needs audio-visual aids as a substitute for first hand experiences.
   He must have samples, models and the like to handle, take apart and examine.
   He needs pictures portraying the same things or the same idea in many different settings.
2. Guidance in the development of the HABIT of observing and of asking questions.
   He must have daily purposeful observation of familiar things to see likenesses, differences, to compare qualities, etc.
3. Guidance in discovering and forming generalizations.
   This must be on the basis of many varied experiences with familiar things. (See chart GROWING UP IN A DEMOCRACY.)
4. Orderliness in the handling of routine classroom matters.
   He must always know what to expect and what is expected of him.
5. Cheerful, firm, kind, patient insistence that he:
   discover his own errors.
   use what he knows.
   think through every problem within his personal experience and his capacity to solve.
   "stand on his own feet."
6. Optimistic confident "standing by" of one who knows (teacher) while he decides what to do and how to do it, and then encouragement to complete successfully what he has begun.

GUIDING PRINCIPLES FOR THE EDUCATION OF THE "MENTALLY RETARDED EDUCABLE" CHILD

Same Objective for all	The over-all objective of education should be the same for the "mentally retarded educable" child as for all children.
Equality of Opportunity	The "mentally retarded educable" child should be given equality of opportunity to reach this objective through adjustment of both subject matter and methods of teaching.
Adjusted Curriculum	Curriculum adjustment should be made on the basis of the capacities, interests and limitations of the individual child. This means that the teacher should be encouraged to use her best judgment in adapting the curriculum in terms of the pupil with whom she is working.
Direct Learning	It should be recognized that the mentally retarded child is a direct-learner and as such is dependent for most of his learnings upon wide use of audio-visual materials, field trips, actual experiences, models, samples and the like.
Judicious Use of Programmed Instructional Materials	Programmed instructional materials are very valuable in providing the much needed careful pacing, repetition and over-learning of skills and other subject matter. These materials are also very valuable in that they give the child experience in working independently, competing with himself and staying with a task until it is finished. However, in the process of forming new concepts there is no substitute for the teacher.
Democratic Practice	The school should keep the "mentally retarded educable" child within the stream of the school population at all possible times by scheduling him with the rank-and-file of the children in music, art, shop, garden, assemblies, athletics and other non-academic experiences. This will provide him with the experience of sharing activities with classmates of various degrees and kinds of ability. It will provide, within the framework of the school situation, a continuous direct-learning experience with democratic community life.
Three R's	The "mentally retarded educable" child should be provided with what he needs of the tool subjects (3 R's) to prepare him to meet the simplest everyday adult needs, and as much more as he is capable of, and interested in, acquiring.
Citizenship Readiness	Adjust his curriculum to his learning rate so that by the time he is ready to leave school for a job he will have had satisfactory orientation for getting and holding a job and for handling the money he earns. He will also feel the need for the kind of human relationships necessary for his own success and happiness in home life, as well as in the community and on the job.

WHAT LEARNINGS ARE OF FIRST IMPORTANCE TO THIS CHILD?

Every boy or girl has a right to the full happiness of day-by-day growing up. He must taste the full joy of everyday experiences at his own level of understanding but in company with others of his own age at varying levels of understanding.

He must repeatedly know the satisfaction of making his own best contribution in company with other individuals, each of whom is making a contribution toward creating something, producing something or accomplishing a common goal together.

The habit of getting along well with others in work and play is the most valuable learning the child can be helped to acquire. Its practical value can be tangibly felt in terms of:

1. Good family relationships;
2. Ability to make and keep friends;
3. Ability to get and hold a job (often even during slack times).

The feeling of emotional security that results from examining one's actions and decisions in terms of "the other fellow" is a factor in good physical health as well as good mental health. The emotional security that results from good human relationships is of first importance in education of all children.

We must not lose sight of the fact that these "mentally retarded educable" children are children and as such have the right to happy childhood experiences without reference to adult necessities. Nevertheless, we must also keep in mind that while they are actually slowed down by a lower than normal rate of learning (I.Q.), they are at the same time fast growing toward the requirements of adult citizenship.

There are certain common learnings, the lack of which would handicap any adult person in a democracy. These are the learnings he needs in order to be able to carry his own weight in his community and in order to make his best contribution to the common good of all. (See chart GROWING UP IN A DEMOCRACY attached to back of book.)

There are other common learnings which help him to feel at ease among others and to maintain his self-respect and poise. These common learnings are a source of great satisfaction as well as of economic and civic value to the adult and so are of great importance in the education of the "mentally retarded educable" child.

The beginnings of most of these common learnings will grow out of and be a part of the everyday childhood experiences in and out of school. In addition he will find many other experiences interesting to him simply because they represent adult needs and activities. All children throughout the ages have delighted in playing "grown-up." Throughout the history of the human race much learning has always taken place in this manner.

In this guidebook, certain common learnings which we know the boy or girl will need on leaving school are noted or starred as minimum essentials, to alert the teacher to their special importance.

These items identified as minimum essentials do not represent what we will force the child to learn by rote but rather what we will, using all our professional skill, attempt to help him acquire through many varied, pleasant and satisfying experiences during the years before he leaves school.

In the back of this guidebook you will find a folded chart titled "GROWING UP IN A DEMOCRACY." This chart is an attempt to indicate information, understandings and appreciations that emerge as a child climbs the steps towards citizenship through direct-learning experiences, directed observations and day-by-day living together in a democratic school community.

Starting at the lower left hand corner of the chart there is an ascending stair. Each step suggests a unit topic, experiences and basic information that may be used as a means of fostering the "mentally retarded educable" child's wholesome development as he progresses through school, from young child to teenage youth, ready to find and hold a job in the community.

To the left of the ascending steps are overlapping curves showing unvoiced feelings and emerging awareness of his importance as an individual and along with his self-identification, an emerging sense of responsibility as a member of his family, his community and his country.

At the extreme right hand side of the chart and parallel with each step, expected outcomes are indicated in terms of the mentally retarded educable child's ongoing wholesome development toward citizenship.

WHY IS HE SO OFTEN A DISCIPLINE PROBLEM?

Two of the most common causes of "bad" classroom behavior are (1) being expected to conform to behavior standards that are beyond one's mental or social level, and (2) the habit of academic failure.

1. Behavior Standards of Home versus School.

It is very important to know the mental age of a child before we evaluate his behavior in terms of "good" or "bad". Surely we cannot expect a big 10 or 12 year-old boy to behave like a 10 or 12 year old boy, if he has a mental age of 7 or 8; nor can we expect a 6 year old to behave like a 6 year old, if he has a mental age of 4. We must always be guided by the child's mental age in formulating standards of behavior for him. We must also know what can be expected of children of different ages so that our demands will be reasonable for each child, whatever his M.A. may be.

Standards of home and environment are often very different from those of the school. Sometimes children are considered disciplinary problems by some teachers because they are noisy, loud-talking, rude or use dirty language. This may annoy, shock, or offend us. If, however, closer acquaintance with the home reveals that the same type of behavior and language prevails there, it certainly is not fair to be angry with the child. We must, of course, make it clear that we simply cannot allow such behavior in school, but we must go farther and patiently help (without scolding) the child develop more acceptable habits. This may take some time and persistent and consistent effort. If we win the child's confidence, he will have some incentive to follow the example of our own better behavior pattern.

2. The Habit of Failure in the Classroom.

Children who have been forced day after day to fail to meet the achievement standards of their classroom have "lost face" with their classmates. They "sense" the contempt of the teachers (and often the principal) for persons of their low ability. They feel the sting of their family's shame that they have a "dumb" child. Little wonder that they finally accept society's evaluation of themselves and decide that they are "dumb", "no good", not worthwhile, and that what they do is of no importance.

They show the effect of this de-valuation of themselves by their unkempt appearance, slovenly walk, aimless trifling, destruction of property, starting a job and abandoning it before it is finished, antagonism toward school, toward authority, the law and the like.

They show their unhappiness over this predicament in which they find themselves in various ways, each according to his temperament. The teacher usually considers the child whose classroom behavior is noisy, sullen, silly, quarrelsome, impudent and the like as a "discipline" problem. This is because he upsets her classroom routines and gets in the way of her lesson teaching. However, this type of child is the easiest to help. It is the child who becomes silent, withdrawn, shy, anxious, tense or nervous who is the most difficult problem. This withdrawn child is difficult to reach; his problem calls for all of the teacher's skill and often for outside help as well.

Suggestions For Helping the "Behavior Problem" Child

The first thing the teacher must do is to take steps to counteract the effect of past failures and re-establish the child's self-respect.

We must examine our own thinking about the "mentally retarded educable" child. He is quick to sense our contempt for him or our unhappiness at having been assigned to teach him. He takes this as a personal affront. We must never think of the "mentally retarded educable" child as being a burden to society or a possible menace to the community. These possibilities can only become true if we fail to help him find his rightful place in the school and in the community. Rather, we must be aware of the danger of the school so failing in its duty toward the "mentally retarded educable" child, as to cause him to become a burden or a menace to society.

We must provide the "mentally retarded educable" child with a smoothly running classroom environment. His habit of failure has produced a feeling of insecurity, and he is easily upset and irritated by changes and by situations that suddenly require him to do something a different way. He will be helped to re-establish a feeling of security if he knows what is expected of him at all times.

We must administer success to these children in large doses daily and many times a day.

This means we must:

1. Patiently pace the daily work to the child's rate of learning.
2. Never begin to teach a new skill until we have made sure that he has the necessary foundation for this new skill.
3. Never present any new work that is beyond his present mental age level unless he clearly shows a readiness for it.
4. Honestly feel and show pleasure over each small step of progress.
5. Continuously and consistently help him to record his progress bit by bit.
6. Give full sincere praise for each new gain.

If the withdrawn child has not been too deeply hurt by his experiences of failure, he will soon respond with happiness and energy to his new experiences of success, appreciation and praise. If he does not so respond, we should call on the Department of Pupil Guidance for help.

If the "disciplinary problem" child has not been hurt too deeply by failure, he, too, will soon respond to success. Many children who have been behavior problems in regular classes quickly adjust when placed with children of their own limitations for academic work which is planned to meet their individual needs. Failure to learn to read is frequently responsible for a child's "bad" behavior. Many children completely "reform" as soon as they find out that they can and are learning to read.

If he does not so respond, we must face the fact that the problem of this child is more complex. We may have to call on the Department of Pupil Guidance for help and advice. His case, however, needs our own special study and special handling. We must expect to try many things and fail. We may often appear to make progress only to have to start all over again. But when we finally achieve success in helping this child become a happy cooperative member of the class, we will have made an important contribution to society.

The suggestions that follow are ways that have been used successfully with many very difficult cases.

Observe him objectively

You will probably find that he has leadership qualities and so is a powerful minority in your classroom. You will realize that he is in direct competition with you for the interest and loyalty of the class. You will notice that his method is invariably one of attack on orderly group procedures. If this is the case, you must set out to get him working with you rather than against you. You must

be objective

1. not develop a personal dislike for the child.
2. refuse to take anything he does or says as an affront to your personal dignity.

be courteous

3. match his bad manners with your own unfailing quiet courtesy toward him regardless of what he does or says. Your courtesy toward every member of the class should set an example to his classmates also.

have a pleasing voice

4. maintain a quiet well-placed pleasing tone of voice at all times. The irritating or soothing effect of a voice is not taken into account as much as it should be.
5. be sincere in your desire to help him.

have sincere desire to help

Try to find out what he thinks is wrong.

If he hates books, give him a breathing spell from them. (See Reading: The Discouraged "Mentally Retarded Educable" Child, p. 88.)

If he thinks the other children pick on him, place him in a part of the room where they won't have to pass by him.

If he wants to "quit" school and go to work, get him thinking about the kind of job he wants and learning something about that kind of job. Get him planning about what he will do with the money he earns (budgeting).

discover special needs

Notice when he usually begins to misbehave.

If he gets rebellious or irritable toward the middle or end of the morning, try to arrange for him to rest for 1/2 hour at about that time every day. This works especially well with the child who is suffering from malnutrition or heart trouble. If his "bad" behavior occurs when reading or arithmetic is begun, examine your lesson plans. Are you sure you are pacing the work to his rate of learning? Are you sure he is ready to learn what you are teaching?

be firm

6. Be firm with him. A cheerful or regretful but always a kindly firmness is absolutely essential at all times. He respects a good leader--and a teacher who knows her own mind.

be consistent

7. Be consistent in your standards of behavior. Make sure you are not expecting behavior beyond the capacity of a child of his mental age. Make sure he understands what you expect of him. And then maintain a calm, kindly, firm frame of mind while you insist that things be done just that way.

help re-establish his self-respect

8. Help him establish his self-respect at home. Speak well of him to his parents. They are probably scolding and pushing him. His parents may complain to you about his lack of progress.

If he is not yet beginning to make progress, be optimistic. Say to them, "He will, as soon as all of us working together, find the best way to help him." Check with them about his diet, amount of sleep, correction of physical defects, etc. Get them to feel that you and they are working together.

If he is working up to his mental capacity at the present, praise him to them. Tell them he is doing "a good job," "working hard." Explain that he is "slow" that he "has to work harder to learn" but NEVER say or indicate that you think he is of low I.Q.

Try to have him make something that is useful, of good design and well made. Let him take it home as a gift to mother or father.

9. Help him establish himself with his classmates. If his person is dirty or his clothes are "queer," do something about it in a friendly manner. Be impersonal about it. Let your attitude be "It is more comfortable to have a clean body and clean clothes" rather than "It is disgraceful to be so dirty."

help him break a bad habit

10. Help him break a bad habit. If he is habitually late for school, notice and comment favorably, for example, when he is earlier than he was yesterday, or when he comes on time. This is progress and he should know that we recognize it and look for continued progress. If he has been a truant, do not expect him to reform overnight. Truancy is a habit not easily broken. Rejoice with him on the days he does come to school and help him to make some kind of record each day he is in school. Comment favorably and confidentially to him when he has not missed a day in a whole week, in almost 2 weeks or more. After he has begun to come fairly regularly, give him some reason for coming

to school by assigning him a job that will only be done if he is there.

11. Work toward group loyalty.

make the classroom a friendly, smooth-running place

If instead of one discipline problem you have a class that seems not to weld itself into a group that can work well together, try the following remedial measures:

Have the class set up with you some definite routines for even such apparently simple activities as:

entering and leaving the room.
passing and collecting materials.
clean-up duties and the like.

Be sure each child knows in which reading or arithmetic group he belongs.

When your lesson planning calls for flexible grouping, post the names of the children for each group for the day's lesson on the bulletin board and be sure that the children read the lists.

Separate them into small groups to play games together.

Plan a trip to some place of interest for the sole purpose of having a good time. The planning together, experiencing together, re-living the good time through talking about it together in class all have a cohesive effect on the whole group and make a good foundation for learning to work together.

As we daily build up in each child the habit of success in place of failure, a realization that his place in the world is important to all of us rather than of no importance, a feeling that he can and must make daily contributions to the activities of the group, we will find that our discipline cases have disappeared and in their places are happy cooperative children, growing up toward stable responsible citizenship.

Read Discipline, Achievement and Mental Health by Phillips, E. Lakin and others for further help with this problem.

WHERE SHALL I BEGIN WITH THE NEW CHILD IN MY CLASS?

An appropriate motto for the education of the "mentally retarded educable" child (or any other child) is begin where the child is.

No matter how young or how old this child is or at what grade level he is working, the teacher always faces the problem of finding just where he is academically, socially, and emotionally in order to plan intelligently to meet his present needs. This is a desirable approach to teaching a "normal" child but it is a NECESSARY approach for successful teaching of the "mentally retarded educable" child.

Any attempt to begin teaching without regard to his various levels in the skill subjects will result in frustration for both the teacher and the child. Attempts at teaching the 3 R's will result in learning and forgetting, a relearning and forgetting, and so on. Attempts to force him to function on a teacher-imposed standard of emotional and social levels will result in complete failure.

It is the teacher who does not know that she must "begin where the child is" who ends the school year with nerves frazzled and a resolve to never again take a class of "mentally retarded educable" children if she can escape it.

It is the child who has been exposed to a succession of such well-meant teaching efforts who becomes truant or lazy and irresponsible, and who leaves school at sixteen to begin a career of social incompetency.

To "begin where the child is," the teacher must know the child. She must use her professional training to find where the child is academically. She will need a kindly understanding of childhood development to find and interpret his social and emotional level. She will need to call on other sources to learn his rate of mental growth, his health and any special social problem. This means she must:

1. get acquainted with the child;
2. evaluate his academic status in terms of his C.A., M.A. and I.Q.;
3. find out what he knows to the point of being able to use.

1. Get Acquainted With the Child

Family Relationships	Does he seem like a contented happy child? Are his father and mother living together happily? Is he the baby of the family--and spoiled? Is he the oldest child--burdened with too much work and responsibility? Does he have other brothers or sisters who are "bright?" Is there serious sickness or sorrow in his home? Does he look to his parents or to a social agency for economic security? Does he "get along" with other members of his family?

Physical Condition and Health History	Does he look robust or undernourished--tired or energetic? Does he have a physical defect or chronic condition that might affect his academic progress? Sight? Hearing? Asthma? Malnutrition? Does he have a physical defect that makes him look or act differently from other children so that his popularity with the group might be affected? Has he a history of illnesses that have affected his school attendance and progress?
School History	What is his attendance record? Has he the HABIT of coming to school? Has he a history of failure? Has he continually failed from first grade on? Has he been "promoted" from grade to grade regardless of his academic failure? Was he "kept back" in any grade? In what grade and when? Has he attended more than one school? Why? What do his previous teachers say about his behavior? What do his previous teachers say about how he gets along with other children?
Effect of Failure	How has failure affected him? Truant? Sullen? Hopeless? Anxious? Quarrelsome? Plodder or lazy in the classroom? What is his attitude toward authority? Toward laws? Has he a police record?
Normal or Mentally Retarded	Is it possible that he may really be a normal child with a specific academic disability such as a reading disability? Has he had a psychological examination? If so, what is his present mental age? How does this M.A. compare with his life age? (C.A.) According to his I.Q., how much progress could you reasonably expect him to make even under the most favorable circumstances?

Records in the child's folder, friendly visits to the home, and daily observation of his classroom and playground activities are the teacher's means of getting acquainted with the child. If in addition to the insight we use in arriving at this picture of the child, we have the humility to place ourselves "in his shoes," we will be well on our way toward finding where the child is and ready to go on from there.

2. Evaluate His Academic Status in Terms of His C.A., M.A., and I.Q.

The child's folder contains information about the child. It will help the teacher to plan a program for him that "begins where the child is." This folder will be filed in the principal's or counselor's office because it contains confidential information. The teacher's only reason for examining the contents of the folder is to assist her to set up immediate specific goals and intensive long-range goals. As a professional person, ethics require that what you learn from this folder will remain confidential. In the folder the teacher will find:

a. Reports of former teachers.
These comments and anecdotal reports contain many clues as to how and why the child failed to make progress in the regular grades. For example, did this failure begin in kindergarten or did it not show up until the second or third grade? What is the pattern of his reaction to continual failure in the regular grades?

b. Achievement Test Scores.
If you find only an average grade level recorded, it will be of little use to you except in the preliminary rough grouping of the class. If a separate score was recorded for each of the subjects tested (reading, arithmetic, language), you have a basis of comparison with the child's present M.A. and also basis for tentative grouping. If, in addition to the scores for each of the subjects tested, you find scores on the sub-tests together with a diagnosis of the child's errors and omissions on each of the subtests, you have a very good basis of grouping him with other children having like needs, in each of the subjects tested. You will usually discover that the child is working at different levels in reading and in arithmetic. You will, therefore, plan to place him in a different group for each of these subjects.

c. Group Intelligence Test.
No child should ever be considered mentally retarded on the basis of the group intelligence test. Such tests are meant to serve only as rough screening devices. When the child's M.A. on this type of test is lower by 2 years or more than his C.A. and he is not adjusting and showing academic progress, it becomes evident that he should have a clinical psychological test.

d. Clinical Psychological Test.*
A study of the results and recommendations will tell us:
C.A., the child's age in years and months on the date the test was given.
M.A., the age level at which he was functioning on the day the test was given.
I.Q., the probable rate of mental growth he has made each year up to the time of the test. The psychologists use the formula $\frac{\text{M.A.}}{\text{C.A.}} = \text{I.Q.}$

If, for example, the clinical psychological test shows the child's functioning mental age level to be that of a 9-year-old child and his date of birth shows him to be 12-years-old, his I.Q. on the date of the test would be .75 or 75% of a hundred.

$$\frac{9\ \text{years}}{10\ \text{years}} \quad \text{or} \quad \frac{108\ \text{months}}{144\ \text{months}} = .75$$

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*We must never forget that "I.Q." is subject to change. The MRE child's I.Q. should never be thought of as a permanent "tag", lest it becomes a millstone around his neck dragging him down into further inadequacy as a person.

A child who matures 100% per year is considered a "normal" child. A child who matures at a rate of less than 100% per year is considered to be a "retarded" child. The slower the rate, the greater the retardation.

The results of this test taken together with other unfavorable factors noted in his folder were the basis for the recommendation to give him the special help he requires by placing him in a special class. Unless the psychological test was given very recently, we will need to update the child's mental age. There is usually a computer available in the school. If not, the teacher can find the child's present mental age by using the formula C.A. x I.Q. = M.A. For example, an 8-year-old child is about to be enrolled in your class. He was tested two years ago when he was 6 years old and was found to be functioning at a mental age of 3 years. His I.Q. is recorded as being 50 I.Q. We will use this I.Q. to find his present mental age as follows:

> changing his 9 years into months we use the formula:
> C.A. x I.Q. = M.A. 96 x .50 = 48 months (M.A. 4 years). He should now, at 9 years old, be functioning at a 4-year level. This tells us where to begin in planning a program for him.

In each of the above cases, we will forget the child's C.A. except for choosing material at the interest level of each child's C.A. The M.A. of each of these children will give us a clue as to what age level of behavior to expect. It will also give us a clue as to where to begin with each child in our first tentative planning for his social and academic progress.

If, for example, a 12-year-old child with a M.A. of 9 years is working at a fourth grade level and if he is able to assume the same kind of responsibility as the "normal" 9 year old, we will be proud of him and let him know we are proud. If he is achieving below the 9 year level, we accept the challenge to find out why -- then make tentative plans on the level he is now performing and accept the challenge to help him rise to the top level of his capacity. If the 8-year-old child whose M.A. is 4 years, is behaving within the level of a "normal" 4-year-old child, we will forget his I.Q. and his size and be prepared to meet him on his own level in planning a program to meet his needs.

From this careful study of each child's folder and thoughtful interpretation of the reports in terms of (1) each child's present needs, and (2) where you must begin in your program planning for each, you now have a mental picture of your class. You will say:

1. "My class ranges from____to____years old, and they will be interested in the things in which children of this age are normally interested."
2. "The mental ages of the children range from____to____, and I must not expect in behavior or academic achievement more than I would expect of "normal" children of these chronological ages."

3. "The grade levels of these children range from ___ to ___ in reading and from ___ to ___ in arithmetic. Some of these children are working up to their mental ages, some are working below, and others far below what we should expect. Those who are working up to capacity need praise and the satisfaction that comes with success. Those who are working below their capacity need further study, remedial work, encouragement and my loyalty to them and my faith in them."

   "I will not forget that a child's I.Q. is not necessarily "fixed" for life, that any removal of the unfavorable factors that may have contributed to his retardation, will very likely show up in a higher I.Q. on subsequent tests. As a teacher I will be alert to sense this, in the shorter length of time it takes for him to acquire new concepts and in his obvious readiness for a new skill, long before I thought he would be ready for it."

3. Find Out What the Child Knows to the Point of Being Able to Use

Informal Inventory Tests: A Means of Discovering Where the Child is

The merchant who examines his stock and counts each item is said to be taking inventory. He then knows what he has in stock at that particular date. He counts only those items that are in good condition. Beginning with this information he is now ready to make up an order for more goods.

If we take an inventory of what the child knows in any given subject on one particular topic, we know where the child is in his learnings on this particular topic. Like the merchant, we count only that which the child knows to the point of being able to use. Like the merchant who is ready to make out his order, we are ready to go on from where the child is in making our plans for specific lessons.

Ours, however, must not be a typical yearly inventory. It must be a continuous process of always finding out if the child knows the skill or has the concept which will be necessary as a "next step" in the development of the unit in progress. It must be a means of finding the child's actual working level in books or with figures; the type of errors he makes and the skills and information he possesses to the point of casual day-by-day use.

The inventory test is a most effective and valuable means of finding out what the child knows to the point of use and where his knowledge is hazy and inaccurate. When used informally as part of the regular classroom program, the information which this test gives the teacher makes it possible for her to plan on the basis of the child's KNOWN NEEDS.

Inventories may be made through observation of child's method, a study of errors he makes or casual conversation. Inventories may also be made through informal tests. These may be oral, written or a combination of both. For example:

1. Oral for "non-readers".
2. Oral statements by teacher--Yes or No written by child for each statement.

3. Written assignment--a piece of independent work for children of one group to do, while the teacher works with another group.

Inventories of the child's various skills and understandings should be made

1. At the beginning of a semester if the class is new to the teacher;
2. For every new child who enters the class during the school year;
3. Before attempting to teach a new skill or a step in a skill (arithmetic, handwriting, etc.);
4. As an initial step in the planning of any new unit.

Specific suggestions for making inventory of children's skills and understandings will be found under separate subject headings. The necessity for first discovering where the child is before attempting any lesson in any one of the 3 R's cannot be over emphasized!

HOW SHALL I ORGANIZE MY CLASS FOR TEACHING?

It seems like a contradiction to say that for a class of "mentally retarded educable" children definite routines must be set up and never deviated from; and at the same time to say that the class program must be flexible and full of creative activity. Yet both of these must take place in order to insure real progress for the "mentally retarded educable" child.

A Child-Centered Day

Center the day's work around the child's interests. Plan all work around activity programs or unit topics in which the class shows an interest. These units may be drawn from social studies, science, health, safety or current events. Plan to develop skills in reading, writing, spelling, numbers, and correct use of the English language through needs that arise in the development of the unit. This does not exclude necessary drill work to fix learnings or enrichment work to foster generalizations of learnings which arose in the unit.

Routines

The "mentally retarded educable" child finds security in a smoothly running classroom. This security results in:

1. Alertness to meaningful situations that arise within the unit and which call for thinking and deciding;
2. More predictable behavior on his part in the classroom.

A certain sense of orderliness must pervade the classroom. The children and teacher must always have the feeling that they are working together toward something through familiar routines. The retarded child has special need for the security of familiar routines to tie to as he reaches out into new learning experiences. The mechanics of the classroom must proceed so smoothly that he gains the sense of security that one finds amid familiar things. Simple routines should be set up by the class and the teacher for all the purely mechanical details of the day and then always followed exactly as set up. The class should then assume responsibility for carrying these out. The teacher's role should be only that of a friendly reminder. Some simple criteria should be suggested as a guide for the children in deciding just how they will carry out the mechanical details of the school day:

1. "the quickest way"--so as not to waste any time;
2. "the quietest way"--so as not to disturb other classes;
3. "the way the most can share"--so that everyone has a turn.

The "mentally retarded educable" child delights in familiar routines for carrying out such humdrum details as entering and leaving the classroom, traffic in the halls to and from rooms, passing and collecting of papers, distributing of materials, response to the school bells (recess, noon, fire, and the like), checking on personal grooming and cleanliness, taking turns in saying grace before beginning to eat, checking his own desk for readiness for the day's work.

Aside from the regular daily routines, other routines must be established for any new thing the class sets out to do. The "How Shall We Do It?" must always be the question that follows the initial planning of any activity that is to be carried out. The success of a field trip to gather information often hinges on the routines that were set up and accepted by the class beforehand. For example

1. How shall we get out of the school most quickly and quietly?
2. How shall we walk--in groups? by two's?
3. How shall we provide for everyone to see (the widened semi-circle with the shortest children in front)?

The actual working of these routines in practice either by rehearsal or puppets or animated pictures is essential so that each child knows exactly what is expected of him.

Schedules

The class schedule should fit into the general school schedule.

The order in which the various subjects should be scheduled will depend upon the type of planning. If unit work is being carried on, the subjects will most likely be combined or at least will flow into each other in a series of natural activities.

It is always well to start the day with an informal discussion and a setting up of a calendar of the day's proposed activities. It is a very satisfying experience to briefly check off what has been accomplished at the end of the day and to make tentative plans for the next day.

In general it is better to have reading activities early in the day or the first thing after the noon period because the children are rested, well fed and better able to concentrate.

In the carrying out of a unit or activity program be sure that an adequate amount of time is given to the 3 R's.

Groups

Group the children according to individual needs and capacities.

Achievement Level Groups

Differences in levels of achievement and rate of progress make grouping within the class advisable for such subjects as reading and arithmetic.

It is not advisable for a teacher to attempt to handle more than three groups in arithmetic or reading, within a single period in a day. When the achievement level of a class makes more than three groups necessary, the teacher will have to use the pupil-leader method of handling the situation.

It usually happens that each child shows a different level for each subject so that he works best in a different group for each subject. This means that there will very likely have to be a different list of the class for reading and arithmetic. For example:

> John may be in the highest group in arithmetic and the middle group in reading.

Flexible Grouping

Flexible grouping is a very practical and satisfactory way to provide for special needs of the individual child. The need for it occurs most often in spelling and arithmetic. In a class where flexible grouping is the rule no child sits through the teaching of something he has already learned and every child is aware that he has a real need for the work the teacher has scheduled for him on any one day.

Inventory tests will show some children who need a foundation for a skill which others of their group have already acquired or some who have a skill which others of their group need to acquire. For example:

> John knows how to carry in addition. He is in Group 2. Other children in his group show a need to learn this skill. He does not, however, know how to tell time by 1/2 hour time intervals. The children of Group 3 have learned to tell time on the hour. They are now ready to tell time by 1/2 hours. The teacher will plan a lesson on this skill with Group 3. She will plan another lesson with those of John's group who need to learn how to carry in addition. Today John will not work with his group but will work with the group that is learning to tell time.

On occasions when children are taken from one group and asked to join another group for a lesson in some needed skill, it is wise to post the names of the children in each group for that day. (This is also good practice in reading for information, especially if the subject of the lesson is included in the posting.) This prepares him for the upset in his established routine.

A Single Group

Social studies and language lessons are usually best conducted with the whole class, although, as the lesson develops, the class sometimes breaks up into committees or groups to work on topics. Even in a single group, individual differences in needs enter into the teacher's planning. She will, however, be able to arrange within the framework of a single group (the entire class) activity to give each child an opportunity to participate at his own level.

Interest Groups

Field trips into the community for information or handwork and manual activities in the classroom to carry out a planned project call for grouping the children into little working committees or interest groups. Each group will be charged with responsibility for some one production or type of information. The personnel of these groups will vary according to the type of activities involved.

Group Routines

The following working pattern for handling groups wihin a single period (45 to 60 minutes) is suggested. For example:

The reading lesson (or arithmetic)

Order of Group Activities	Lowest Ability Groups (least mature)	Middle Group	Highest Ability Group (most mature)
First	reading or other activity of the unit to be carried out independently of teacher	work with teacher	material to read or unit activity to carry out independently during the time the teacher is busy with the other two groups
Second	work with teacher	independent work based on lesson just completed with teacher	
Third	Activity in connection with the above lesson independent of teacher	continue above or other activity connected with the unit	work with teacher

The lowest ability group often has the shortest span of attention. They also have less ability to work independently. Therefore, it is best to divide a period into 3 short sessions with the instruction period in the middle for the lowest ability group. If the teacher starts the middle group off by working with her first, they can usually carry on alone during the remainder of the period. The highest ability group, being the most mature, is best able to begin and carry out independent work for the first two thirds of the period.

Programmed instructional materials will be valuable during these independent work periods. A teachers aid or student leader would be helpful but not necessary during this type of activity.

HANDWORK CREATES DIRECT-LEARNING OPPORTUNITIES

Handwork: A Teaching Procedure for Direct-Learning

Handwork is an integral part of teaching procedure for the "mentally retarded educable" child. It is a valuable device for integrating and correlating school subjects. It is also a means of forming a bond between the home and school. It is not just another subject added to the curriculum but is part of and belongs to all subjects. It is closely tied up with the natural learning activities of children. It offers opportunities for creative expression and often serves as a starting point for a hobby which the child continues in his leisure hours through childhood and on through his adult life.

The integrating of handwork with the child's learnings in social studies, science, reading, arithmetic and language provides direct-learning experiences for the child. It demands the child's most careful observation and thoughtful manipulation of materials in order to express his ideas. It provides for the child:

1. Direct-learning as an objective medium for expressing his ideas;
2. A hobby for leisure time activity;
3. A handiness with common tools;
4. A working knowledge of a variety of construction materials.

The "mentally retarded educable" child is a direct-learner. He must be given opportunities to experiment, to plan, to investigate and to construct. Social studies, science, arithmetic and even reading and languages will take on a new interest and engage his full attention when he learns them through purposeful experiences which he enjoys and can pursue with educational success.

When the "mentally retarded educable" child is given the opportunity for direct-learning through the use of manipulative materials, we find that he:

1. Learns more readily and retains what he learns;
2. Gets a clearer understanding of society and his place as a contributing member in it;
3. At the same time acquires some useful skills with common hand tools of the shop, garden or home.

All children have a natural impulse to activity. Much out-of-school learning, good and bad, takes place in this manner. These native impulses, when intelligently guided, lead a child to acquiring valuable experiences and desirable social habits. The "mentally retarded educable" child's chief impulse to activity is manipulative. He likes to manipulate tools and materials. He must often be led to investigate but is delighted when his observation is directed to interesting things in his environment. We must foster his curiosity about the HOW and WHY of his environment. An urge to express his ideas and emotions always follows an interesting experience. He is eager to draw, paint model, or construct according to the medium that he likes best or is best able to handle. He finds great satisfaction in sharing interests and activities with others.

Handwork As Part Of the Content and Procedure Of An Activity Unit

The children's classroom teacher is the logical person to conduct handwork activities since these should grow naturally out of the learning experiences or activity units carried on as part of the classroom work. This is a part of the teacher's well rounded program which she uses as a teaching technique in addition to and or in connection with field trips, visual and audio-visual aids (and books) in the development of a unit.

Being a modern professional person she has already learned (or is eager to learn) to handle and use the slide projector, film strip projector, the opaque projector, and the movie machine. She probably has an understanding of the fundamental principles of fine arts so that she will be able to help her pupils achieve artistic satisfaction with their handwork. She needs to acquire, if she does not already possess it:

1. Enough skill with the use of common tools to help the children get technical satisfaction.
2. Enough understanding of how to manipulate various materials so that the children will be able to give satisfactory expression to their ideas and information in the form of models, pictures, maps, slides, panoramas, dioramas and the like.

This understanding of how to use materials can be obtained from fellow teachers or other persons who "know how," from the shop teacher and art teacher or from courses in arts and crafts and woodshop.

If the organization of the school already provides a shop teacher, and definite "shop periods" are scheduled, the classroom teacher and shop teacher should work closely together in planning handwork. In this case the plans will be made by the classroom teacher, the shop teacher and the children. The work will be carried out in the shop and brought to the classroom for display or used as part of the development of the unit. This procedure works out very well provided the shop teacher has a day-by-day mental picture of the development of the unit and the two teachers can work together in the planning. One advantage of this is that the shop teacher has been trained both in the handling of tools and materials and in teaching children how to handle them.

A handwork activity should be characterized by the same general kind of planning as any other learning experience.

1. The thing the children are about to attempt should be within their ability to accomplish.
2. Materials must be ready at hand so that the teacher's time is free for observing, advising and teaching.
3. The room should be readied for the activity at hand.
    This often means the need for moving desks and tables for proper light.
    This always means putting away all books, papers and other materials not related to the activity at hand.

4. Thinking should occur.
   The children should know exactly what they are attempting to do.
   Discussion, planning and selection of materials should precede the actual doing.
   The work should be thoughtfully carried out. The why and the how must be constantly considered.
   The finished work should be examined, discussed and put to use. "Did we do what we set out to do?" "Does it show what we wanted it to show?" "Will it work?" "Can we use it?"
5. Natural opportunities for working together, planning together, sharing together should foster growth in good human relations.
6. Some actual skill with tools as well as specific information should result.
7. It should have an important place in the culmination of the unit.

The educational success of a unit depends to a great degree upon the teacher's ability to guide and to plan for the children's expression of ideas through handwork. The close tie-up of handwork as a direct-learning vehicle in the development of concepts cannot be overemphasized.

Handwork Can Be a Means of Forming a Bond Between the Home and School

To give a child an opportunity to make something for his home or for a special gift to one of his family helps link the home and school in terms of friendliness and mutual interest. It is often a means of acquainting the parents with the fact that their child is clever with his hands or is learning to use his hands even though he is slow to make progress in books. It will be a great relief to parents to find that this child, whose teachers have always complained about him, has at last achieved something that wins their admiration and praise. Christmas, Easter, Mother's Day, Father's Day and family birthdays are occasions for making gifts.

Construction work should "go along with" the development of the unit. This is sometimes not easy to accomplish unless children are encouraged to take some of their work home to complete. For example, sanding a piece of wood may be necessary for a pleasing product but often takes more time than can be spared in the classroom. The child may, however, take it home and return the next morning with a job he is proud to display to all his classmates and the teacher. Often his father or older brother has helped him and that in itself is a valuable experience because it makes a bond between himself, his school and his home. His parents want to know what he is making and in explaining it to them he tells them about the unit that is in process of development in his class. They are pleased to know that he is learning something that is "useful" and "practical" and that he is not "wasting his time" in school.

Sometimes one child's father or mother comes in to the classroom to show the teacher and children how to make or do something. The value of this kind of experience cannot be over-estimated.

Time Allotment for Handwork

No definite amount of time can be allotted for handwork either daily or weekly. Since it is a fundamental part of child-experience in all subjects, the time used for it should properly come from the time allotted for the learning area in which it is being used. For example:

> If we were making holes in the earth 3 inches apart to plant some flower seeds according to directions on the envelope, is it an arithmetic or reading or science experience? or all three?
> If we are making puppets for dramatizing a story we have read, is it part of the reading area? Or language? Or both?
> If we are making a sugar mill with miniature models showing the various processes, is it handwork as a subject or social studies?
> Is the making of a city map or laying out of the transit system, handwork as a subject or is it social studies?
> If the children plan to make a movie depicting scenes of early Hawaiian life, does the time not properly come from the social studies allotment?

The Shift In Handwork Emphasis As the "Mentally Retarded Educable" Child Approaches Adolescence

During the "mentally retarded educable" child's Primary-elementary school experience, handwork is used chiefly as a teaching procedure in meeting his needs as a direct-learner. He acquires some tool skills incidentally in order to make or to do the thing which was part of the development of the unit. It is the duty of the primary-elementary school to see that he does not acquire bad or slovenly habits in the handling of tools or materials, because it is very hard for him to unlearn anything he has learned to do incorrectly.

During his Intermediate and High School years the emphasis should shift to acquisition of tool skills. This does not mean that he will no longer need the direct-learning opportunities of the correlation of handwork with other subject matter. It does mean, however, that he should have the opportunity to gain as much skill as he is able in the handling of tools and materials commonly needed by the average person about the house and yard.

Boys should know
- How and when to plant, cultivate and harvest.
- How and when to use fertilizer and insecticides.
- How to do a good paint job outside or in the house.
- How to clean windows and clean and polish floors and furniture.
- How to remove spots and press clothing.
- How to sew on buttons and make simple repairs.
- How to make simple articles of furniture, to put up shelves, to make simple repairs to furniture, to put in a new pane of glass.

Girls should know
- How to mend and darn and to make simple clothes.
- How to prepare a good meal--to can and preserve foods.
- How to care for a young child--food, rest and play.

- What clothing may be washed and what must be dry-cleaned.
- How to wash various materials and what cleaning agents to use.

Girls and boys should know

- How to repair an iron, toaster or vacuum cleaner cord.
- How to put a new washer on a faucet.
- How to put in a fuse (safely).

The Part-Time Job

The "mentally retarded educable" child is typically the unskilled or semiskilled worker in the community. Less often he achieves enough skill to learn a trade. Because he needs more guidance than others in adjusting to any new situation, some schools are assuming the responsibility for helping him make a successful start at earning a living before he formally leaves school. This is a natural outgrowth from handwork--to school workshop--into out-of-school employment. A program of alternating two weeks work in out-of-school employment and two weeks at school with the shop teacher acting as coordinator between the job and the school makes a very satisfactory arrangement. In school the teenager works on budgeting his money and time, learning something of the relation of his job to the life of the community, drawing on the teacher's knowledge of geography, history, and economics to help him understand employer-employee relationships and the like. (See "GROWING UP IN A DEMOCRACY.")

PART II

DIRECT-LEARNING DEMANDS CURRICULUM ADJUSTMENT

There is no attempt in this guidebook to outline a Course of Study for the "mentally retarded educable" child. The intention is rather to point the way toward curriculum adjustment. All curriculum adjustment must be influenced by the child's rate of learning (I.Q.), length of time remaining before he will leave school, and his probable needs as an adult citizen. Curriculum adjustment should be made on the basis of the content in the Curriculum Guide in current use in the schools. The suggestions contained in this guidebook are intended to help the teacher to make this curriculum adjustment.

In the selection of material at specific grade levels we must be very realistic. We must be aware that the "mentally retarded educable" child has fewer learning years due to his retarded rate of mental growth. We must be aware that there will always be from 1 to 6 years after he begins school before he will begin to be ready for instruction in the 3 R's. We must realize that it is difficult and in many cases impossible for him to comprehend the abstract.

Knowing that the child's actual learning time is short and that he is dependent upon first hand experiences or vivid audio-visual, visual aids and models for his learning, we must not attempt to teach anything for which no direct-learning materials or experiences are available. THIS LIMITS WHAT WE WILL TEACH.

At the primary and elementary levels the teacher of the "mentally retarded educable" child must see her job as being the key job in the whole school structure. For here we lay foundations upon which the intermediate and senior high school teachers will build.

Suggestions for curriculum adjustment are made under separate subject headings only for purpose of easy reference. This does not mean that we recommend formal isolated subject teaching! It is assumed, of course, that all academic work for "mentally retarded educable" children will grow out of activity or experience units. The primary and elementary school must build solid foundations for the "mentally retarded educable" child's future citizenship. We are, therefore, not recommending so much a different content of subject matter as a different point of emphasis and a different method (direct-learning) during the child's primary and elementary school experiences. In his later years of schooling, intermediate and high school, he will need different content because his education must then be more sharply channeled along pre-citizenship and pre-vocational lines.

Under the several subject headings which follow, certain minimum essentials are starred or discussed, some objectives or goals are set up and probable limits are set for achievement in reading and arithmetic for children of different degrees of mental retardation.

This is not meant to indicate that we must push the very low I.Q. child to learn every item marked ''minimum essential''; or that we will limit the less retarded child to the few simple objectives set up under any subject heading, if he is capable of learning and using more. Probable limits are based on the effect of the child's low I.Q. on the amount of learning he can acquire within the span of his school-life. We use the word ''probable'' because the I.Q. is constant in theory only. There is always the possibility that his I.Q. may rise (or fall) with a resultant increase (or decrease) in capacity to learn.

The only item in the school curriculum that is truly a minimum essential is that the child achieve good human relationships. This is, fortunately for the human race, not so dependent upon intelligence as is academic achievement.

GROWING UP IN A DEMOCRACY

The chart described on pg. 5 represents steps in the child's upward progress towards citizenship from the primary level through high school. The technique of using steps to show progress through the years is used to emphasize the quality of continuity that is essential in the process of growing up. This continuity is maintained through the flow of experiences one into another; each unit using some information and understandings of the last unit and in turn contributing its share to the next unit which follows.

Each step represents a large unit of experience. The topics that are listed on each step suggest small units to be developed within the large topic. Other topics will occur to the teacher as she works with the children on each step.

The generalizations that curve over the steps are "feelings about things" attitudes and understandings (often unvoiced by the child), that emerge as a result of the child's experiences, observation and the information he has gained. Notice that the generalizations emerge gradually, often overlapping several steps. Each generalization depends upon the one below it for its emergence.

At the extreme right of the chart, in CAPITAL LETTERS, are shown the progressive changes we expect to take place in him as a person; his self-identification, his appreciation of his need to contribute, his need to accept the help of other contributing members of the community, and a growing understanding of his own responsibility to himself, to his family, and to the community.

All of the steps progressing from primary level through senior high are included in the chart with the purpose of alerting primary and elementary special class teachers to the importance of earlier units as foundations for those to be taught at upper levels. In general we might expect the "mentally retarded educable" child's experiences to have progressed up the first three steps and possibly the fourth step before he enters intermediate school.

As the child progresses step by step, current events, social studies, science, health and safety each have important contributions to make throughout his school year. Steady progress in language arts and arithmetic will provide him with the incentive to use them as tools to add to his experiences. Music, art, shop, recreation and a little laughter when woven like a thread into the fabric of the school day experiences, serve to enrich and add depth to the whole program.

THE INVENTORY: AN AID IN PLANNING

Current Events, Social Studies, Science, Health and Safety

Suggestions for making an inventory of the pupils' readiness for a specific unit in social studies, science, health and safety.

1. Select the unit topic in terms of its specific goal and also in terms of its sequential contribution toward the long-range goal of self-identification in his role as a contributing person and responsible citizen in the home and in the community.
   - Assemble all available material.
   - Outline items of information which need to be acquired during the development of the unit.
2. Prepare informal inventory tests:
   - To discover what experiences the pupils already have had with the ideas and materials of the unit.
   - To find out which items of important information the pupils already know.
   - To uncover any poor attitudes or misinformation the pupils may have concerning the subject of the unit.
3. On the basis of the above findings make plans:
   - To use the pupils' interest in the experiences they already have had, as a starting point for new experiences.
   - To extend and enrich the pupils' previous experiences.
   - To create situations that will lead the pupils to discover corrections of their misinformation and to develop new appreciations and attitudes.
   - To provide new experiences which will guide the pupils to discover new items of important information.
   - To provide continuity in the child's school experiences and a basis for some generalizations.

While the class will usually work as a single group, if the teacher will keep in mind the various individual needs as revealed in the inventory test, all of the pupils will be assured some measure of growth.

Inventory tests may be oral or written or a combination of both.
- Oral for "non-readers."
- Oral statements by teacher; "Yes" or "No" written by pupils.
- Written assignment; a piece of independent work for pupils of one group while the teacher works with another group.

DIRECT-LEARNING EXPERIENCES AND MATERIALS

In these modern times the community has ample resources to meet the "mentally retarded educable" child's need for direct-learning opportunities. When modern educational equipment is made available to him, we will find his field of learning greatly extended, and we will find him learning faster and retaining more. Modern educational equipment needed for direct-learning includes:

1. Transportation facilities for groups of children.
   For a wealth of first-hand island experiences.
2. Movie projector and a TV--provide the nearest approach to first-hand experience:
   To bring far away places near.
   To provide information, to create desirable "feelings about things", to set examples.
3. Stereographs--give a three--dimentional picture that makes the picture seem real.
4. Slide and film strip projectors.
5. Opaque projectors--by means of which the whole group can examine a small picture enlarged on screen.
6. Pictures--from school or library collections and from magazines.
7. Maps and globes.
   To help form some otherwise difficult concepts.
8. Sample models or exhibits of things-of-long-ago or far-away.
   To help the child interpret life in his community now.

The Field-Trip - A Source of Direct-Learning Experience

Since there is a lamentable lag between modern invention and the educational systems of the U.S.A., the teacher in the average school may find few of these things available. She does have, nevertheless, a wealth of experience which, though limited in scope, provides the means for partially meeting the needs of the direct-learner. These are experiences in the home, school garden, wood shop, cafeteria, immediate locality, various places of interest in the city, various industrial plants, and various public service institutions within the city.

In these first-hand experiences much information will be gained, and many needs will arise for an increased speaking vocabulary and for use of arithmetic. The child will gain a background of interest to carry him into the process of recording and reading about his experiences. The sharing of experiences and the need for working together will cause the child to find a satisfying place for himself among his classmates. His whole school day will be an emotionally, physically and mentally satisfying part of his daily living.

Preparing The Class For A Field Trip

The retarded child's need for first-hand experience makes it necessary to take the class on frequent excursions into the community. On these trips it is important that the children achieve success in meeting community behavior standards, and that they engage in the thoughtful serious kind of observation that will result in learning certain specific items of information.

Knowing that the retarded child does not adjust readily to new situations and needs the security of routines, plans for every trip must include the children's own specific statements as to

(1) just what they expect to find out (learn),
(2) what they will do, and
(3) how they will do it.

Different kinds of trips will call for different kinds of routines but all should be based on: courtesy, responsibility to the community, and the best way to gain the desired information. The children's attitude should be: "We are going to a business place among busy people. We will be on business, too. We will see and remember all we can."

The rules the class makes should include:

Courtesy to and from the school: on the bus, on the street.
Responsibility: for keeping together, for safety, for not creating a disturbance.
Courtesy at the business place: polite questions, quiet voices, walking not running, not interfering with the usual business of the place.
Information: list of the things we want to find out about.

After the children set up their rules of conduct for a trip, they should dramatize and draw pictures or diagrams of what they will do and how they will do it. In this way every child will know exactly what is expected of him and what type of situation he will find himself in. The teacher must have visited the place and studied the situation in order to guide the children in setting up standards.

SOCIAL OBJECTIVES IN CURRENT EVENTS, SOCIAL STUDIES AND SCIENCE

Current Events

Current events have an important place in the curriculum of the "mentally retarded educable" child because they are life in action, environment in action. Every worthwhile news item is part of, or belongs to social studies, science, health, safety, recreation or the like. The news items that: (1) affect the child or his family, (2) that cause changes in his immediate environment, or (3) that help him to better understand and participate in living in a democracy are those that have a place in the "mentally retarded educable" child's curriculum.

Interest in current events is common to all children. The kind of event that interests a child depends on his age, experience and his present mental age. This interest should be carefully nurtured because it aids in increasing the child's powers of observation, his understanding of the world he lives in and his self-respect as an informed person.

We must not think of current events as happenings reported in the newspaper only. There are current events in the classroom, in the school and the child's community, as well as in the larger world of affairs.

A daily newspaper with classroom notes and happenings, as well as pictures from newspapers has its place in the classroom beginning at the first grade level. (See "Beginnings of Written Communication" for ideas about how to manage a news sheet on a small vocabulary, pp. 58-59.)

A brief daily discussion of current events is a good way to start the school day because the children are fresh from home and the morning radio program, and are talkative. Often a very educationally worthwhile unit-of-experience has its beginnings in some current event in the field of science or social studies, health or safety.

Social Studies

Social studies is the one school subject that enters most intimately into the field of human relations. As a subject it works through certain specific areas of information toward broad generalizations. The "mentally retarded educable" child is typically lacking, or at least is limited, in ability to make generalizations and, except through the medium of direct-learning experiences, to gain or retain information.

We have it as a duty to carefully plan direct-learning experiences. We must persistently guide the child's observations so that he gains certain specific information, and in so far as he is capable, arrives at a certain degree of generalization. For the very low I.Q. child this may only amount to a "dim awareness of" or a "feeling about." For the majority of "mentally retarded educable" children there will be "feeling about" or "awareness of" in forms of unvoiced appreciations rather than verbalized generalizations. (See arcs on GROWING UP IN A DEMOCRACY chart attached to back of book.)

Social studies topics are most effective when developed in a series of short units. Each unit:

1. Provides some specific information;
2. Forms a basis for a few specific generalizations; and
3. In a continuity with the preceding and following units provides a step toward some broad generalization basic to good human relationships.

New concepts, new experiences that are similar to previous experiences, and new problems that challenge thinking, all evolve out of the development of a unit and call for learning in the field of the 3 R's. The high degree of interest that motivates these learnings, together with the use of direct-learning materials, insures retention of facts learned.

The teacher will find that, in general, curriculum guides in current use closely parallel the first steps of growth in the Citizenship Outline. (See GROWING UP IN A DEMOCRACY.)
Beyond the primary level the child should have as much of the content outlined for each grade as he is capable of understanding. This means that our criteria for planning this curriculum adjustment at any level will be:

1. Can I provide the child first-hand experiences for this?
2. Does he have or can I help him develop a background of experience for this? The child can develop this background of experience with the help of audio-visual and manipulative aids, TV, movies, slides, pictures, models, and the like. He needs this help to make the necessary new associations.
3. Will this contribute toward the child's day-by-day happy development and toward the understandings and appreciations that will ready him for his future role of citizenship? (See GROWING UP IN A DEMOCRACY.)

Science

The "mentally retarded educable" child is typically weak in powers of observation and in ability to deal with the abstract or to make generalizations. This limits the amount and kind of science experiences that we may include in his curriculum.

Science Goals for the Mentally Retarded Educable Child

1. To develop habits of careful observation.
2. To extend wholesome interests in the physical environment.
3. To foster thoughtful care of living things.
4. To bring about an acquaintance with those scientific facts that concern health and safety.
5. To stimulate economic purchases and use of commercial products and mechanical devices with an ability to make a selection on the basis of value and durability.

6. To increase the child's power to interpret simple phenomena of the physical environment and of the behavior of living things.
7. To open up some possibilities for the use of leisure time.

All observations, experiments and activities should help to orient the child in the world of nature about him, and to see some of the simplest ways in which natural laws apply to human existence. Nature study, biology, chemistry and physics all offer material from which selection can be made. This selection of material must always be influenced by the child's life age, his mental age, his background of experience, and the relation of the particular science topic to the unit that is under way. Science units will logically grow out of, or into, or be part of, every experience unit whether it be social studies, health, safety or current events.

A careful study of the citizenship outline, Growing Up In A Democracy, will make clear the need for many science experiences in order to more fully explain and more fully develop many of the suggested units.

Criteria for Selecting Science Units

Science curriculum guides in current use contain much material that is needed and can be assimilated by the "mentally retarded educable" child. The following criteria are suggested as a basis for selecting the most valuable content.

Science experience unit should be one which will contribute:

1. To an interpretation of the environment;
2. To adequate adaptation within the environment (in terms of health, safety and consumer needs);
3. To appreciations and attitudes that will add to the enjoyment of the environment in which the child lives.

The subject matter must be:

1. An integral part of the environment as he sees it day-by-day;
2. Simple enough for the "mentally retarded educable" child to understand;
3. Tangible enough for him to appreciate;
4. Objective enough for him to utilize;
5. Of the kind that can be explained objectively with concrete materials.

The following suggested experiences are included here as an indication of the type of science experience that is suited to the limitations of these children. It is not intended that any "mentally retarded educable" child should be limited to these simple science experiences if he has capacity to go further; nor does it mean that the very low I.Q. child is expected to undertake every experience here listed.

Suggested Experiences

Subject matter drawn from the immediate environment of the child.

1. Habits and needs to native birds, of animals, of fish.
2. Preservation of wildlife.
3. Plant life (indoors and outdoors), its needs for development; absorption of moisture; growth; value.
4. Daily phenomena of weather: Rain, sunshine, hail, fog; amount of rainfall.
5. Function and operation of simple mechanical devices, such as the water wheel, bellows, air pump, carpet sweeper, bicycle, meat grinder, egg beater, vacuum cleaner and others.
6. Some of the major features of the universe, such as sun, moon, earth, stars, clouds, wind, seasons, day and night, tides, ocean currents.
7. Sources and composition of common materials used for food, clothing, shelter, tools, transportation.
8. Scientific explanation of some of the modern means of communication and transportation of interest, such as the telephone, telegraph, T.V., radio, bus, automobile, airplane, ship.

Skills offered by various sciences that are usable in daily living.

1. Reading thermometers; cooking, weather, etc.
2. Pouring from a bottle so that it will not gurgle and spill.
3. Using a medicine dropper.
4. Tapping a glass container so as to loosen the lid.
5. Building a fire.
6. Bleaching or dyeing cloth.
7. Using a siphon.
8. Comparing the relative value of different weights or materials in cooking utensils.
9. Simple household processes, such as using a plunger, changing fuses, putting new washers on faucets, using extension cords for electric lamps or small appliances.
10. Reading pressure gauges; barometer, tire gauge, etc.

Directed observation of simple, well-planned experiments illustrating well-known scientific principles.

1. Buoyancy of water -- Floating different sizes of materials of various shapes in water and noticing the water line of each; experimenting with the shape and resulting variation of the water line; applying to the making of toy boats the principle that objects are buoyed up by the amount of water they displace.
2. Leakage of water -- Measuring the amount of water wasted in a given length of time from a slow leak, appreciating the fact that trivial waste results in considerable loss.
3. Purification of water.
   Putting on small glass lids or on dishes (a) water from a puddle, (b) water from a faucet, and (c) boiled water, observing daily through magnifying

glass the changes taking place.
Filtering water and boiling water.
Investigating the local filtration plant and water supply.

Knowledge that contributes to the understanding and appreciation of the behavior and needs of living things.

1. Life cycles of animals and plants.
2. Distribution of seeds.
3. Growth of seedlings and bulbs under different conditions of light, moisture, and heat.
4. Kinds of common trees: their foliage, fruits, and uses.
5. Behavior and needs of pets at school and at home.
6. Behavior and physical condition of mice fed on different foods.

Practical knowledge that contributes to desirable habits of health and safety.

1. Adjustment to different weather conditions.
2. Effect of bacteria upon food.
3. Ventilation; respiration.
4. Prevention of disease.
5. Posture, care of teeth, eyes, ears, hair, skin.
6. Use of simple antiseptics.
7. Use and repair of electrical devices.
8. Causes, danger and prevention of short circuits.
9. Use and storage of inflammable materials.
10. Function and mechanics of fire alarm and fire extinguisher.
11. Methods of extinguishing fires.
12. Construction and function of household water system: Water meter, traps in drainage, connection with city systems.
13. Auditory interpretation and physical response to disaster warning signals.

Practical knowledge that leads to wise selection and satisfactory use of commercial products.

1. General repair of household appliances.
2. Care, use, quality and endurance of tools.
3. Choice of cloth: Kinds; characteristics; limitations; values; tests for wool, cotton and silk; tests for permanence of prints and dyes.
4. Use and limitations of cleaning agents, home-made and commercial.
5. Use of foods: Kinds; values; preservation; refrigeration.
6. Mechanics of pumps.

Simple equipment and common products that will widen the child's range of interest, contribute to better understanding, or lead to wise selection and use of commercial products:

1. Thermometers, light meter.
2. Medicine dropper.
3. Magnifying glass.

4. Strong alkaline soap and neutral soap, detergents.
5. Dyes, bleaches, stain removers.
6. Common home remedies.
7. Window ventilators, air conditioner.
8. Rainfall gauge.
9. Thermos container.

Experiences which contribute to desirable use of leisure time.

1. Visiting museums and exhibitions of scientific interest.
2. Making mechanical household appliances and toys.
3. Collecting, mounting and labeling specimens of trees, flowers, rocks.
4. Raising animals, birds, fish.
5. Other hobbies, such as gardening, making weather vanes, sun dials, bird baths, bird houses.

SOCIAL OBJECTIVES IN ORAL AND WRITTEN COMMUNICATION

American Speech

The "mentally retarded educable" child usually has a limited vocabulary and usually makes many errors in enunciation and pronunciation. In Hawaii some children have the added disadvantage of a foreign language background and daily exposure to the use of pidgin English in out-of-school hours. This foreign language background of so many children in Hawaii makes language a very important subject in the curriculum of our school. We must accept it as a duty to foster in every child, no matter how limited his capacity, a desire to speak English and a pride in his success. This is more easily accomplished if we call our spoken language "American speech" (which it actually is, rather than English). The use of the term "American speech" ties in with our goal of making him proud of his country and of his country's flag. Many a child, who has been scolded for not "speaking English", will take great pride in his progress in using American speech.

As we learn to do by doing, just so we learn to speak by speaking. A teacher often finds her earnest efforts to drill the child in the use of correct English, blocked by his retreat into silence in the classroom. This child will, however, accept correct English usage as his own goal and be proud of his success when he:

1. Understands that the English language is simply the American way of communicating ideas;
2. Is aware that it is the idea that counts;
3. Realizes that American speech is a useful tool for expressing his ideas;
4. Learns that American speech can supply him with certain socially accepted, courteous forms of expression.
5. Realizes that learning to think and speak in "English" will make learning to read much easier for him.

Unit or activity programs tend to create an atmosphere of informality and spontaneity which makes the need for communication of ideas very real to the child. As he lives through the experiences of the unit he will find many real needs for learning to communicate ideas. He will participate in many experiences where communication of ideas will be necessary, desirable or just a pleasant activity. Real situations, imagined situations, dramatization in which the pupils or puppets are the actors provide experiences in which the "mentally retarded educable" child learns to speak by speaking.

Written Communication

The child's ability to use written language will grow out of, and be limited by, his facility in using American speech for communication. He must first be able to say what he wishes to write. An adult citizen's needs for written language are few. We must, to the best of our ability, provide the "mentally retarded educable" child with enough facility in written language to cope with the minimum demands he will meet as an adult.

Spelling is a necessity in written language. However, these children will have no need to master a long list of "spelling words." Ordinary spelling needs are simple. There are, for example, 220 words that comprise from 50 to 75% of the running words in any written material. These words are a minimum essential for the most limited adult writing needs. No child should, of course, be limited to the learning of this short list. The limit of his progress should be determined by his own ability to learn to spell and to use the words in written communication.

It goes without saying that all language, oral or written, should be a natural part of the activity program and should not be isolated in any single period of the day.

Growth in Oral and Written Communication Skills

The social objectives in language listed on the following pages are those which we should try to help the "mentally retarded educable" child to reach before leaving school. Minimum essentials for adult social needs are starred. The child will need to be able to use these minimum essentials independently by the end of the intermediate level. Many of these children leave school at that time.

Intermediate and high school levels are included in the oral and written language outlines to alert the elementary teacher to the importance of the foundation she is building.

The lined section to the extreme left of the page carries X marks to indicate the capacity level for each goal. Where the X follows through more than one level, it is assumed that this objective will be reached, (1) only by the cumulative process of many experiences over the child's school years or (2) that the quality of the child's response to that situation will improve as he grows more mature. We find, for example, #13 Courteous Forms of Personal Communication starred at the Primary-Elementary, Intermediate or Terminal levels. The seven-year-old child may learn to deliver a simple verbal message. However, many learning experiences over the school years should raise the level of this skill until at sixteen years of age, he can deliver a longer message with more poise and dependable accuracy.

LANGUAGE INVENTORIES: ORAL AND WRITTEN

A language inventory should be made before starting to teach any of the skills listed under Social Objectives in Oral and Written language. This inventory will be a means of discovering how much use the child now makes of specific skills in oral or written language. It should become a continuing inventory, recording the child's progress, and alerting the teacher to his needs for further development of language skills. Suggestions for making communication inventories will be found on p. 40 and pp. 46-47.

AN ORAL COMMUNICATION INVENTORY

A Means of Discovering Where the Child Is

Suggestions for discovering how much use the child now makes of American speech to express his ideas orally and to respond to social situations with ease.

How much vocabulary and sentence-sense has he?

The most valuable inventory of the child's verbal language is made through listening to the child's spontaneous responses and through his conversation with other children during any of the classroom, playground or excursion activities. As you listen to his informal communication of ideas:

1. Make note of
   Mispronunciation and careless enunciation.
   Errors in correct usage of words.
   Limited vocabulary.
   Use of single word or of word groups instead of sentences to express a thought.
2. List these needs in the order of those needed by the largest number of the class.
3. Plan various experiences which will make the pupils aware of their need and cause them to work for and reach one objective at a time.

What accepted forms of social usage does he know and use?

Make use of every possible situation which calls for the ability to use a socially accepted courteous form of expression.*

1. Note whether or not pupils can use such forms.
2. Plan definite experiences in which the child will learn to use these forms with poise.

How much use does he make of other oral language skills that will help him become an accepted member of his group?

1. In the outline of Social Objectives in Oral Language, note the skills listed under the topic, Courteous Forms of Personal Communication.
   Explore the extent to which the child can use each of these skills in a real or staged situation.
2. Plan lessons to meet specific needs.

CAUTION: The "mentally retarded educable" child must always know what the goal is and must adopt it as his own to insure real progress. He must also see the tangible results of his efforts.

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*See Courteous Forms of Personal Communication, p. 42.

OUTLINE IN TERMS OF GROWTH IN ABILITY TO COMMUNICATE VERBALLY

Social Objectives

Primary-Elementary	Intermediate or Terminal	High School	
			Speech Improvement
x	x		*1. Articulation, pronunciation and enunciation. Use of a small mirror is helpful in showing the child the correct placement of lips, teeth or tongue, etc., in producing correct enunciation.
x	x	x	2. Inflection and rhythm. According to English usage rather than Hawaiian or Oriental. Choral speaking is a valuable aid.
x	x	x	3. Well modulated, pleasant voice. The teacher's voice should always be a good model; correct breathing and diaphragm speaking will assist in establishing a pleasant voice.
			Vocabulary to be Enlarged and Enriched
x	x	x	1. Listening--The words he understands when listening. This will be his largest vocabulary.
x	x	x	2. Speaking--The words he uses in conversation. This will grow out of his listening vocabulary.
			Growth in Sentence-Sense
			1. Sentence development.
x			*a. Develop the child's typical noun-verb and spontaneous fragmentary statement into a complete sentence. For example: "Plenty bus!" -- "There are many buses," or "See how many buses there are!" "You want?" -- "Do you want this?"
			b. Develop richer sentences.
	x		By means of wider vocabulary and use of phrases. ...a small coconut. ...walking very slowly. ...to the store, etc. ...under the house, etc. ...between the houses.
	x	x	By use of compound subject, object or verb. For example: May and I will... ...running and jumping. ...papayas and mangoes.

Primary-Elementary	Intermediate or Terminal	High School	
		x	By use of longer and more complex sentence structure. For example: While I was talking, the bell rang. I cannot work in the cafeteria because I have a cold. When I am through with my work, I will go to the movies with you.
			2. Development toward more fluent speech (paragraph growth).
x			*a. Contribute one sentence in group communication.
	x		*b. Use two related sentences on a topic of interest.
	x	x	c. Use three or more related sentences on a topic of interest.
		x	d. Use many related sentences on a single topic with special attention to securing an interesting opening and satisfying closing sentence.
			Note: These minimum essentials may seem limited in scope. However, an adult can get along quite well in ordinary requirements of daily living if he can express himself as indicated in these starred items.
			Courteous Forms of Personal Communication
x	x		*1. To make courteous greetings.
x	x		*2. To thank a person for a courtesy.
x	x		*3. To apologize for an unintentional error, discourtesy or accident.
x	x		*4. To acknowledge an introduction.
x	x		*5. To ask a favor or a question.
x	x		*6. To offer a gift, or to share a thing, or to help.
x	x	x	7. To talk with a familiar small group about home experiences.
x	x		*8. To talk with a familiar small group about shared experiences.
x	x	x	9. To be a good host to visitors from another class or from the outside.
x	x		*10. To be a satisfactory guest.
x	x		*11. To meet strange children with friendliness and poise.
	x	x	12. To converse interestingly and pleasantly with acquaintances.
x	x		*13. To carry a verbal message to a third person.
	x	x	14. To converse with a group of boys and girls about school, sport, and local events.
x	x		*15. To introduce a friend to another friend.
x	x		*16. To leave a group gracefully.
	x	x	17. To congratulate a schoolmate upon achievement or good fortune.
	x	x	18. To be hostess or guest at dinner or luncheon or party.
x			*19. To courteously interrupt a person or a group of persons.
			Discussing and Planning.
x	x	x	1. To plan under teacher leadership some simple classroom or schoolyard activity of the group.

Primary-Elementary	Intermediate or Terminal	High School		
		x	2.	To join in the development of social studies or science topics.
		x	3.	To participate in the organization of a formal project. For example: an assembly program.
		x	4.	To plan an activity which requires division of labor and coordination of activities.
		x	5.	To plan an activity under the direction of a pupil chairman.
	x	x	6.	To discuss the results of an undertaking just completed by the class.
x	x	x	7.	To discuss under teacher leadership a story or material that all have read.
x	x	x	8.	To discuss some topic of interest in the unit.
x	x	x	9.	To discuss specific recent events - with teacher or group leader as chairman.
	x		*10.	To join in the expression of opinion preceding the adoption of a course of action by the class group.

Note: In planning to develop any skill listed above, keep in mind that we choose topics at the interest level of the child's life age but we do not expect the child's performance to be beyond his mental age level (although he sometimes surprises us).

Telling Stories

Primary-Elementary	Intermediate or Terminal	High School		
x	x	x	1.	To retell all or part of a story that the class wishes to hear.
	x		*2.	To tell to a familiar group, as part of a conversation, a short interesting bit of personal experience.
x	x	x	3.	To participate in a session of telling bits of personal experience.
	x	x	4.	To tell a one paragraph, single phase story of personal experience; funny, surprising, thrilling, embarrassing, etc.
		x	5.	To retell a brief story read independently or heard outside the classroom.
x	x	x	6.	To narrate a personal experience of some particular sort, suggested by the teacher or classmate.
	x		*7.	To describe an incident with the accuracy required in court testimony.
		x	8.	To retell a conversation vividly and accurately. For example: an oral agreement, a quarrel, an interview.

Questions and Answers

Primary-Elementary	Intermediate or Terminal	High School		
x	x		*1.	To ask a question.
x	x		*2.	To inquire how to find a certain place or object.
	x		*3.	To give directions for finding a certain place or object.
x	x		*4.	To ask for an explanation of a difficulty encountered. For example: in a school lesson, project, or job.
	x		*5.	To answer requests for explanations.

Primary-Elementary	Intermediate or Terminal	High School	
x	x	x	6. To answer specific questions on a school subject.
	x	x	7. To offer a solution to a problem within his capacity to understand.
			Dramatization
x			1. To engage in dramatic play.
x			2. To act out, under teacher leadership, a nursery rhyme or primary story.
x			3. To act out, under teacher leadership, a first or second reader story.
	x		4. To act out, without guidance, a very short story or rhyme.
	x	x	5. To present a playlet as part of a program for outsiders, for assembly, other class, parents.
			Telephoning
	x		*1. To telephone in an emergency--fire, police, hospital, doctor.
	x		*2. To telephone your home or a friend with a specific message in mind. For example: "Mother, may I stay at John's house for supper?" "Mary, I will stop by for you on the way to the movies," etc.
	x		*3. To receive a telephone call for another member of the family.
	x	x	4. To receive an invitation by telephone.
	x	x	5. To extend an invitation to a friend.
	x		*6. To telephone a message for someone else.
		x	7. To give a tradesman an order.
		x	8. To telephone thanks for a favor.
	x		*9. To seek the use of another's telephone in giving or receiving a message.
		x	10. To plan with a friend for some activity, such as picnicking, getting up a party, etc.
	x	x	11. When calling a friend, to converse briefly with another member of the family who answers the phone.
	x	x	12. To inquire about a friend who is sick.
		x	13. To do shopping which requires decision on the basis of information secured in the conversation.
		x	14. To make a business complaint or ask for an adjustment.
		x	15. To make arrangements for a party or school program, etc.
	x		*16. To get airplanes, bus or similar information by telephone.
		x	17. To arrange with a representative of another group for a game or some similar activity.
		x	18. To telephone a long and difficult message for someone else.
		x	19. To make a long distance call for any purpose.
			Interviews
		x	1. To secure information, for a class report or for class newspaper.
	x		*2. To secure permission, authority or advice.

Primary-Elementary	Intermediate or Terminal	High School		
x	x		*3.	To buy a stock article.
	x		*4.	To apply for a part-time position.
		x	5.	To arrange a game, contest, etc.
	x		*6.	To apply for a position.
				Reporting
x	x	x	1.	To report individual observations made during some class excursion.
	x	x	2.	To secure through observation or inquiry, information which the class desires and to report orally.
	x	x	3.	To report to the class, items of information upon a topic gained from reading material.
		x	4.	To be one of a committee to assume responsibility for a certain phase of the observation during an excursion or experiment, and to report.
	x	x	5.	To find and report the answer to a definite question raised in class.

Note: Re-read the fifth paragraph on p. 39 for guidance in interpreting an objective marked x on all levels.
Objectives that are marked with a * are considered minimum essentials.

THE WRITTEN COMMUNICATION INVENTORY

A Means of Discovering Where the Child Is

Communication of ideas in writing

Suggestions for discovering the extent of the "mentally retarded educable" child's ability to use written language to communicate ideas.

1. Listen to him.
   Can he communicate ideas orally? He needs this skill as a foundation for written communication.
2. Can he write legibly?
3. Can he spell?
   See Spelling Inventory, p. 56

Written forms and letters

Suggestions for finding out where you need to begin in teaching him to fill out forms and to write letters or notes.

Note items listed under Forms, Social Letters, Business Letters, pp. 71-73, in Social Objectives in Written Language. Examine the child's attempt at producing any of these items. For example in filling out a form:

(1) Was he able to print his name?
(2) Did he write correct date of birth?
(3) Could he spell his street name, etc.?

In writing a letter:

(1) Did the pupil leave the place or the date out of the heading of a letter?
(2) Did he use a correct salutation and conclusion?
(3) Did he know where to start the body of the letter?
(4) Did he indent his paragraphs?

Handwriting: A Tool for Written Communication

Suggestions for finding where to begin with each child and what techniques you will need to use to meet his need to write legibly.

An examination of different kinds of written assignments handed in by the children will reveal various handwriting needs. For example, there may be in one class:

1. Those whose muscular coordination is so poor that they cannot write legible script and must be taught manuscript.
2. Those who write manuscript but have enough muscular coordination to be ready to learn script.

3. Those who need to learn to form the script letters more accurately.
4. Those whose handwriting is good but who need to be held up to standard.

CAUTION: The "mentally retarded educable" child must always know what the goal is and must adopt it as his own to insure progress. He must also see the tangible results of his progress.

OUTLINE IN TERMS OF GROWTH IN ABILITY TO COMMUNICATE IN WRITING

Social Objectives

Primary-Elementary	Intermediate or Terminal	High School	
			Vocabulary for written communication
			1. Spelling--The words he uses when writing. (This will be his smallest vocabulary and will grow out of his speaking vocabulary).
x	x		*a. Words that occur in 50-75% of all written language--Dolch list. (See p. 54)
	x		*b. Local words commonly used and names needed for letter writing or filling out forms.
	x	x	c. Other words used frequently enough to make learning to spell them important.
			Labels, Titles and Signs
x			1. To assist in labeling lockers, tablets, books, drawing, etc., with the owner's names.
x			2. To devise as a group, labels for boxes, shelves, cabinets, drawers, etc., for tools, supplies and equipment.
x			3. To devise and write the placards and labels needed for the class post-office, grocery, garden, etc. (needed for the unit).
x	x	x	4. To label each specimen in a collection of seeds, stones, plants, etc. (related to the unit).
	x	x	5. To design a title page for a class or individual book, such as a journal, a scrap-book, a book of original stories or poems, etc.
			Note: Neatness and legibility are of first importance whether these be in printed form or in script.
			Memoranda: rules, recipes and direction; records, notes and diaries
x	x	x	1. To make as a group, a shopping list for a class activity, supplies for cooking, etc., or list of objects to be looked for during an excursion.
x	x	x	2. To make as a group a rule or reminder necessary for the care and use of tools, materials, room duties and other tasks to be performed by individuals or groups.
x	x	x	3. To keep a class record of interesting events and developments in connection with the unit, such as a bird or flower record, etc.
		x	4. To write out recipes, directions to aid in making some object or in using some tool or apparatus.
		x	*5. To make a personal shopping list.

Note: Since these are for personal use, legibility is not so important as information.

2

Blank Forms

Primary-Elementary	Intermediate or Terminal	High School		
	x	x	1.	To write the personal data required in printed examinations and tests.
	x	x	2.	To furnish personal data required on record-cards for school files.
	x		*3.	To fill the blanks in a printed application, such as for library card or job.
	x		*4.	To pay a bill by writing a check or to send money by a postal money order.
	x		*5.	To give a receipt for money paid.
	x		*6.	To fill out questionnaires, record cards, Social Security forms, etc.

Note: Neatness and legibility are important factors in these skills. Ability to vary size of printing in spaces of varying areas or on lines of varying lengths is important.

Social Letters

Primary-Elementary	Intermediate or Terminal	High School		
x			1.	To compose as a group an informal invitation and the reply to such an invitation.
x			2.	To compose as a group a note of thanks, for request, etc.
x			3.	To copy such an invitation as is composed under 1 to take to a parent or to be sent to others.
x	x	x	4.	To write an informal invitation or a reply to such invitation.
	x		*5.	To write a note of thanks or of request.
	x		*6.	To write a simple letter to a relative or friend.
		x	7.	To write a newsy letter to a relative, friend or "shut-in."
		x	8.	To write a note of greeting or congratulation, as for a birthday or some good fortune.
		x	9.	To write a social letter to a group of acquaintances, such as another class.
		x	10.	To write an appreciative and tactful note of thanks.
	x	x	11.	To write informal and courteous notes of invitation and acceptance or regret.
	x	x	12.	To write friendly and informal letters of news and gossip to friends of the writer's age or to older relatives.
	x	x	13.	To write sincere and simple letters of sympathy, or to entertain a "shut-in."

Note: Since the ideas conveyed in the message are paramount, some degree of legibility is necessary.

Business Letters

Primary-Elementary	Intermediate or Terminal	High School		
	x	x	1.	To write a request for information.

Primary-Elementary	Intermediate or Terminal	High School	
	x	x	2. To write an order for a single item of merchandise.
	x	x	3. To write an order for merchandise of more than one type.
	x		4. To write a letter requesting an interview.
		x	5. To make a complaint by mail.
	x		*6. To write a clear, concise, accurate and complete mail order.
		x	7. To write straightforward and effective letters of application.
	x		*8. To write condensed and accurate telegrams and night letters.

Note: A high degree of legibility plus a concise statement of fact are equally important in the use of this skill.

Announcements, Notices and Advertisements

Primary-Elementary	Intermediate or Terminal	High School	
x			1. To compose a simple announcement of interest to the class.
	x		2. To write and post a simple announcement of interest to the group.
x	x		3. To compose as a group a notice for the school bulletin board or for the boards in other rooms concerning an article lost or found.
x	x	x	4. To compose as a group a simple announcement to persons outside the class, such as a notice to parents, of some class or school event.
x	x	x	5. To advertise a puppet show, entertainment, or some school or class activity by means of simple posters.
	x		*6. To advertise for a job.
	x		*7. To advertise for a house or apartment.
	x		*8. To advertise to offer personal property for sale.
	x		*9. To advertise for miscellaneous items wanted.

Note: Since these will be reproduced in print or type, the ideas are more important than legibility.

Reports, Reviews, Summaries

Primary-Elementary	Intermediate or Terminal	High School	
x			1. To compose as a group a summary of a class conversation which may serve as a reading lesson later when typed.
	x	x	2. To write for a class journal or individual record an account of a visit, an excursion, a project, etc.
	x		3. To compose as a group a summary of what has been learned of some topic.
x	x	x	4. To answer satisfactorily examination questions in elementary science, social studies, reading, etc.
	x	x	5. To write for the class newspaper an account of a program, a play, entertainment, etc.

News Stories

Primary-Elementary	Intermediate or Terminal	High School	
		x	1. To write an entertaining anecdote or incident for an interested group or for the class newspaper.

Primary-Elementary	Intermediate or Terminal	High School		
	x	x	2.	To write an announcement for the school paper or for the bulletin board.
		x	3.	To write an account of a sports event or other school function for the class newspaper.
	x	x	4.	To write for the class newspaper an account of an assembly, a talk, a play or similar entertainment.

Note: Re-read the fifth paragraph on p. 39 for guidance in interpreting an objective marked x on all levels.
Objectives that are marked with a * are considered minimum essentials.

HANDWRITING AND SPELLING: TOOLS FOR WRITTEN COMMUNICATION

Handwriting

Handwriting is a tool of written language. Since we write to convey ideas or to make records, writing must be legible.

Physical, rather than mental factors influence the ability to write legibly. For this reason, some retarded children who have a high degree of muscular coordination are able to achieve very legible and well formed handwriting. We find very legible handwriting even among very low I.Q. children. Some children never develop enough muscular coordination to write legible script. These must be taught manuscript (print). Since, however, script is an accepted medium for handwriting, it is our responsibility to see to it that with but a few extreme exceptions, every "mentally retarded educable" child is able to write in clear legible script on leaving school at 16 years of age.

The transition from manuscript to script needs to be made, if at all possible, at the same age as children in the regular grades are learning to use script. If a "mentally retarded educable" child comes to your special class from a regular grade with poorly formed manuscript writing, it might be a good idea not to try to improve his manuscript writing but to immediately begin to teach him to write in script. Everything we can do to help him be more like the normal child than different will help him regain or retain his self-respect.

There are added benefits in teaching him to write in script. For example:

1. It provides practice in left to right eye movement.
2. It provides experience in seeing and feeling the writing of the word as a continuous whole. The pencil does not lift from the page from the beginning to the end of the word. For example, In contrast with script, manuscript forces the child to break the word into its separate letters. For example, h-a-p-p-y.

In addition to learning to write in script, the older child will need to learn to print capital letters. This is required for filling out forms. (See Labels and Signs, p. 48 under Social Objectives in Written Language.)

In general, the same type of handwriting lessons as is carried on in the regular primary grades is suitable for young children. The older mentally retarded educable child who has not learned to write legibly, should be helped to form good habits of posture, position of the paper and holding of pencil. He must be taught the correct formation of each letter of the alphabet by whatever method he finds it possible to learn. In some cases, this may involve tracing well formed letters in either print or script.

In teaching manuscript writing, care must be taken to begin each letter at the correct starting point. Many retarded children have reversal tendencies in forming letters and must be given careful guidance to help them break this habit.

Except for teaching the correct formation of the letters, the handwriting lesson should be a part of any written language lesson activity. In all written work the child should know that he is expected to use his best handwriting. The teacher should be careful not to require so much written work as to make if difficult for the child to maintain the standard because of fatigue or hurry.

Spelling Lists for Minimum Writing Needs

A Minimum List: Sources and Criteria for Selection

It should be our purpose to help the "mentally retarded educable" child during his years in school to acquire as large a writing vocabulary as he is capable of using. A spelling program designed to meet the minimum needs of child or adult for the simplest kind of written communication should include the following lists. Needless to say, not every child can learn to spell all of these words, during his few remaining years in school. However, these children should be helped to learn as many of the words on the Dolch list as they are able to use, and some of the commonest nouns, including those of family relationships, and others common to local use.

1. The most frequently used words: (See Dolch list, p. 54)
   These 220 words comprise from 50-75% of the running words of any written selection (children's or adults'). Examination of this list will disclose that these are the "little words" used most frequently in speaking. They are also the words the children of the Hawaiian Islands need to learn to use in order to round out their incomplete sentences into acceptable English form. If the child learns to say them (speaking), see them (reading), and write them (spelling), the correlation of these activities will help him form the habit of thinking them in English sentences. This, then, should be the minimum essential spelling list for every "mentally retarded educable" child.
2. Names Needed for Letters, Memos and Forms; and Commonly Used Local Words:
   *The child's own name, his street, city or town, the State and U.S.A., his father's full name, mother's maiden name (for filling out forms).
   *Names of his own sisters, brothers and the names by which he calls his parents (mama, mom, mother, etc., for use in writing notes or letters).
   Names common to family relationship: aunt, sister, grandmother, and the like.
   *Names of the months and abbreviations (for letter writing). Days of the week and abbreviations.
   Names of common articles of food, especially the typical island dishes and articles of clothing. (These names to be used for lists or taking orders).
   Direction terms: mauka, makai, Diamond Head, Ewa.
   Other accepted Hawaiian words: kapu, aloha, puka, and the like.
   Complimentary letter closings: with love, yours truly, and the like.
3. Other Frequently Used Words:
   These should be words that will be used frequently enough during development of a unit to provide the necessary immediate recall and meaningful repetition.

These words should also be essential as a carry over into other experiences throughout his school years and into adult life. (See Social Objectives, pp. 38 and 48-51).

4. Any Other Words Needed for Written Communication: (See regular grade spelling lists.)

The Dolch list and the starred items in list 2 are needed by every adult.

Dolch List: The Most Frequently Used Words

The following 220 words* are needed in the speaking, reading and writing vocabulary of every adult.

The words are grouped under levels to alert the teacher to the ease or difficulty of learning the word. Levels are not intended to indicate sequence in selection of words or teaching. Children should learn to spell these words as their need for them arises regardless of level.

Level I. The sound of every letter can be heard in each of these words:

in
is
it
if
did
sit

six
big
him
his

red
get
let
ten
yes
went
help

not
got
hot
on

up
us
but
cut
run
jump

at
am
as
an

can
and
ran
ask
had
has

I
a
we
me
be
he

go
no
so
my
by

hold
cold
old
find
kind

Level II. Each of these words has a silent letter:

give
have
live

tell
well
will
pick

made
make
came

gave
take
ate

like
ride
five

see
keep

eat
read

say
may

Level III. These words have silent letters, blends, or combinations of letters that change the sound:

clean
black
bring
brown
drink
fly
from
try

green
play
please
she
wish
wash
sleep

stop
best
fast
just
must

three
with
both
thank
think

then
these
those
the
that
this
them

out
our
found
round
now
how
down

all
call
fall
small
walk
saw
draw

far
are
start
her
or
for
first

when
why
what
where
which
much
write
white

was
want
new
light
right

---

*A box of 220 cards containing the Dolch words can be obtained through local school supply stores or by ordering direct from the Garrard Press, Champaign, Illinois.

Level IV. Words of more than one syllable. Some are compound words and some contain "little words" which the child already knows how to spell:

into
myself
upon
going
little
about
around
because
before
away
always
today
after
better
over
never
together
under
funny
every
carry
open
seven

Level V. Words whose pronunciation gives few or confusing clues to the spelling:

again
any
been
blue
buy
come
could
do
does
done
don't
eight
four
goes
full
good
grow
here
hurt
its
know
laugh
long
look
many
of
off
one
once
only
own
pretty
put
pull
said
shall
show
sing
some
soon
to
too
two
their
there
they
use
very
warm
were
who
work
would
yellow
you
your

THE SPELLING INVENTORY

A Means of Discovering Where the Child Is

The only spelling words the child "knows" are those he can use in expressing ideas in writing. The only test of what words he can "spell" is one that involves writing dictated sentences. Spelling lists of words are of no value. The following is a description of an inventory procedure that has been used successfully:

Teacher's Preparation

The unit in progress provided good ideas for meaningful, interesting sentences. The teacher composed sentences using the words she wished to check on. She wrote these sentences on the board and covered them before the children arrived at school. Lined paper was provided for the children's use.

The Inventory Pre-Test

Tr. : Introduced each sentence orally in a real or imaginary situation.
Example: I think the cat will drink some milk now.

Group: Repeated the sentence in unison after the teacher.
Example: I think the cat will drink some milk now.

Tr. : Again repeated the sentence, drawing a blank line on the board for each word in the sentence, left the blanks for each word that the children had already learned or were now being checked for. She then wrote in the unlearned words that she did not intend to teach at this time.
Example:__ ___ ___ ___ __ ___ some ____ now.

Child : Wrote the sentence as best he could, marking a line for any word he could not write.
Examples: One child wrote -- I____ the cat will_____ some milk now.
Another wrote -- I thing the cat will_____ some melk now.
(Note the words in the above sentences which the children did not attempt or misspelled.)

Tr. : Allowed a reasonable time for writing the sentence. She was aware that the child who could spell a word, would write it at almost the usual speed.

Tr. : After a reasonable number of sentences had been dictated, the sentences were uncovered on the blackboard. (It would have been better to be able to give each child an individual copy of the sentences at this time.)

Child : Compared his sentence with the copy. Drew a ring around or blocked out any misspelled words.

Child : Recorded all correctly spelled words in his progress book.

Child : Checked in "Correction Column" any word previously learned but now misspelled. This was important because it gave him pride in his progress and guided him to face the fact that he alone must assume responsibility for retaining what he once learns.

Tr. : Collected all the children's papers, and on the basis of misspelled words or words not attempted (see example), planned a series of spelling lessons. In the example cited, it is obvious that two of the children need to learn to write (spell) think and drink. One of the children needs to listen to the word milk. An examination of typical handwriting errors provided a basis for planning interesting handwriting lessons.
If an opaque projector had been available, the teacher could have shown the children their papers on a screen placed near the correctly written sentences. The children themselves could then have picked out the words they needed to learn to spell. They could also have recognized their own handwriting needs.

Groups for Spelling and Handwriting Instruction

1. Immature children who are not ready for spelling.

Group I	Group II
Quiet activity connected with development of the current unit	Handwriting-manuscript (with teacher)
Handwriting (with teacher) beginning script	Quiet activity connected with development of the current unit

2. One spelling group, one immature group.

Group I	Group II
Writing original sentences using review words	Handwriting (with teacher) Group Work
Spelling (with teacher)	Quiet activity connected with development of the current unit

3. Two spelling groups: work with teacher on alternate days.

<table>
<tr><th>Group I</th><th>Group II</th></tr>
<tr><td colspan="2">Handwriting (Entire Class)</td></tr>
<tr><td>Spelling: writing original sentences using review words</td><td>Spelling (with teacher)</td></tr>
</table>

4. For a class in which all pupils are ready for spelling.

Group I	Group II
Spelling: writing original sentences using review words	Spelling (with teacher)
Spelling (with teacher)	Spelling: writing original sentences using new words.

SUGGESTIONS FOR PLANNING AND GROUPING

1. Select words from the spelling lists in whatever order they are useful to the current reading, language or social studies work.
2. Correlate spelling with handwriting instruction.
3. Teach few new words per week: one or two new words per week for the slower child; no more than four or five per week for the more advanced child unless he clearly shows he can learn more. This may seem slow progress, but as you work with these children you will realize the value of building new learnings slowly and of carefully "tieing in" each new learning with many new experiences.
4. The child should use each new word many times in many different contexts. He should learn to write the new word without hesitation as fast as he ordinarily writes, and with his best legibility.
5. Provide for continual review of words once learned. The young "mentally retarded educable" child and the older low I.Q. child can use 3 or 4 review words per week in original or dictated sentences. The more mature child should use 8 or more.
6. Enrich the writing vocabulary of the children who learn to spell faster than the others of their group by teaching the variations from the base form of the words. For example: ride, rides, riding, rode, or bring, brought, etc.
7. Plan short interesting spelling and handwriting periods. A twenty minute period divided in equal parts for two groups is usually successful.
8. The young "mentally retarded educable" child makes good progress on three handwriting and two spelling periods a week. After a child has acquired legible handwriting, he progresses satisfactorily with three spelling and two handwriting periods a week. Finally, when he is able to write legibly with ease, the handwriting period can be dropped in favor of more practice with spelling in written language. However, a continual check needs to be made on legibility in order to hold him to the standard of his own best handwriting.

Picture Writing: Beginnings of Written Communication

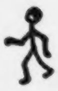
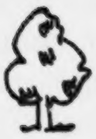
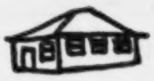
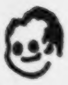
Since the words from the Dolch list occur most frequently in both children's and adults' writings, they should be considered as minimum essentials. These words, however, are meaningless out of context and simply learning to spell a list of them will not help the child to retain them for use in written communication.

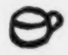
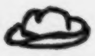
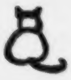
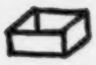
It is suggested that those who have acquired some ability to use written language be encouraged to write stories, reports, and letters and assume the responsibility for writing the Dolch words he has learned while the teacher agrees to supply him with all other needed words. Use of the Dolch words together with picture-writing is an interesting device for helping the young "mentally retarded educable" child or the older low I.Q. child in learning to spell.

Picture-writing is fascinating to all children. In the samples of children's picture-writing that follows, note the learning sequence from one word to a complete sentence.

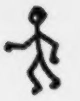
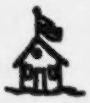
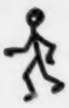
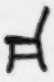
Picture Stories

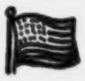
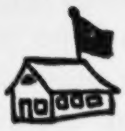
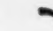
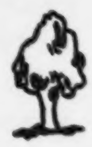
1. **For labeling**

A  A  A  A 

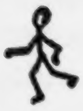
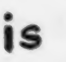
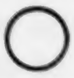
The  The  The  The 

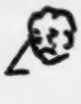
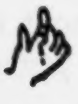
2. **For following directions to draw the object or action**

A  in  A  on a 

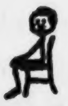
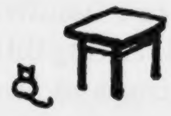
A  on a  A  in a 

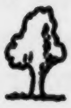
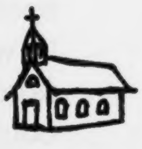
3. **Stories**

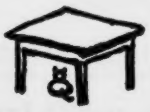
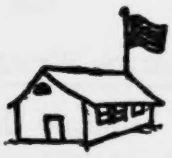
I am a  The  is 

I will not  if I cut my 

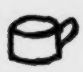
4. **Place--Where?**

on a  by the 

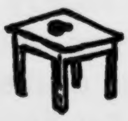
in a  The boy is at 

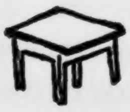
under the  We will run to 

5. **Steps in learning to use words to write ideas**

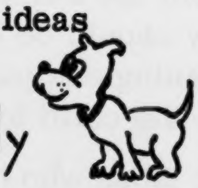
A 

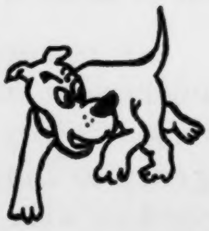
A cup

A cup 

A cup on a 

A cup on a table

My 

My dog 

My dog is

My dog is big.

A Spelling Method

The number of words to be taught in a single lesson should depend on the interest and the capacity of the children. Any lesson is most valuable when it is terminated before interest begins to wane. The capacity of the child for remembering spelling words determines the number that may be profitably taught in the single lesson. If, for instance, a teacher has taught 5 words and the next day finds that the children recall only 2, we should then assume that the child's capacity is no more than 2 words in a lesson.

Children who have difficulty spelling correctly often do not listen to the sound of the word (hear the words distinctly) or "look at the words attentively." Some children do not readily "get the feel" of writing the word from ordinary spelling practice. The method described below is a direct attack on these three weaknesses.

The teacher first ascertains that the child can use and understand the word. Then she guides him as he:

1. Listens to the word.
2. Looks at and examines the word letter by letter.
3. Feels the writing of the word.
4. Uses the word in a new context by writing it at his usual writing speed in an original sentence or in a sentence dictated by the teacher. An original sentence on a topic which is of interest to him is more valuable because everything he does "on his own" during the day, fosters growth toward independence and a feeling of responsibility.

Description of a Method Used Successfully

The teacher has (1) studied the written assignment which was given as an inventory test to determine what spelling words the children needed, or (2) she has read through some stories the children have written, or (3) she may simply have listed the words the children asked her to spell for them as they wrote letters, stories or news accounts. From any of the above, she has selected a short list of words which she now knows several children need to learn how to spell. We will call these children Group II.

Before starting to work with these children she first dictates some words to Group I with directions to use them in writing sentences or a story. These are the words Group I had already learned to spell and this activity provides necessary practice and repetition but at an independent level. She now suggests to Group II* the need for a spelling lesson and proceeds as follows.

Meaning (Use it)	Tr. :	One of the words several people asked me to spell was from. How did you want to use that word, John?
	John :	My dog ran away from home.

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*See Flexible Grouping, p. 19.

Tr. : There are other times when we need to write from.
Child : Trucks took the cane from the field.
Child : I worked from 9 to 12.
Child : It is a long walk from my house to the school.

Auditory Imagery (Hear it)

Tr. : Let's listen carefully to this word.
"from f r o m f r o m f r o m"
(saying the word slowly and more and more slowly several times)
Tr. : Say it with me and listen to yourself say it.
Stretch the word out till you hear each sound.
Group: "from f r o m f r o m f r o m"
Tr. : How many sounds did you hear?
Group: Four

Auditory and Visual Imagery (Hear it and see it)

Tr. : Writing on the blackboard
Now let's look at "from."
How many letters has "from"?
Group: Four
Tr. : How many sounds did you say we heard in "from"?
Group: Four
Tr. : A sound for every letter but we slide the first two together a bit.
I'll give you each sound of the word and you give me each letter.
Teacher makes sound of "fr."
Group: Says name of letters "fr."
Tr. : Writes fr
Says sound of "o" as it is heard in "from".
Group: Says name of letter "o."
Tr. : Writes, joining the "o" to "r"
Says sound of "m" as it is heard in "from".
Group: Says name of letter "m."
Tr. : Writes, joining "m" to "fro", completing the word

Visual Imagery (See it)

Tr. : Now let's look at the word to see what care we must take in writing it.
Tell me about the first letter "f."
Group: Give some descriptive comment on the formation of letter "f."
Tr. : The "r"?
Group: Make some descriptive comment on the "r."
Tr. : the "o"?
Group: Join to the "m" at the top of the "o."
Tr. : The "m"?
Group: Three humps (or some descriptive comment).

Kinesthetic Imagery (The feel of it)	Tr. :	Suggests: Now let us write it with a fingertip. Don't look at your finger. Look at the word on the board. Your eyes will tell your fingers what to write.
	Tr. :	Demonstrate this technique.
	Group:	The child writes, his eyes on the copy while his fingertip writes the word on the desk. He says the word as he writes, stretching its sound to match his writing speed.
	Tr. :	Write it with your finger as often as you need. Be sure to keep looking at the board. Your finger will write what you see and hear. Then write it without looking at the board. Be sure to compare with the board copy carefully each time. If you made a mistake, don't correct it. Just fold the paper over and don't look at it again. Then practice with your finger until you think you can write it correctly. Now try again. (Tr. demonstrates as she explains.)
	Group:	One by one as each child decides he can write without copying, he then writes on his paper and compares with the copy on the board, folding the practice paper over each time.
	Tr. :	Now practice writing correctly without looking at the word on the board. Write it again and again until you can write it as fast as you write other words you know. Then use it in your own sentences.
Meaning (Use it)	Group:	Writes again and again until the word can be writen without hesitation. Some children can do this on their first trial, others must rewrite it many times.
	Group:	Uses the word in as many original sentences as the children have time to write and in as many different contexts as occur to them
Independent Use (Through Practice)		Continues the written use of any newly learned word over a period of many days to provide the necessary repetition to fix it in their memories.

Analysis of the Method

Analysis of what occurred in this lesson shows that there were five steps in learning the word.

1. The children spoke the word, using it in speech, thus showing they knew its meaning.
2. They listened to the word.
3. They looked at the word--compared what they saw with what they heard. Examined it in letter-by-letter sequence.
4. They wrote the word--to get the feel of it--to make writing it automatic.
5. They used the word.

Notice: That the lesson began and ended with meaning.
That the word was learned as a whole. It was not broken up into letters except for the left to right examination before attempting to memorize it.
That memory was established through writing; not naming of separate letters.

Correlation With Reading

This spelling method gives the mentally retarded educable child experience with phonics and syllabification. It "ties in with" what he is learning in reading.

1. The above lesson dealt with a phonetic word. Words of this type are listed in Level I of the Dolch words spelling list, p. 54.

2. There is a silent letter in each word of the Dolch list on Level II. In this case, the comparison between "how many sounds do we hear?" and "how many letters are there?" would cause the children to discover and identify one silent letter. For example:
   make - the "e" is silent.
   After several such words have been learned, a generalization can be made and exceptions noted--(though no "rule" is learned.)

3. In listening for the sounds of a word as we say the word slowly and more slowly, we might get few sounds for a many lettered word. For example:
   l i g h t. We hear 3 sounds. We identify the two silent letters. We may even feel we want to think of ight as a single sound unit. following the initial sound of l. There are several other words we can now spell--might, sight, right, light, etc. When some child suggests spelling "bite" or "kite" we discover there are two spellings for one sound unit. We realize that if we are not sure which spelling we need for any such word only our friend, the dictionary, can help us out.
   The above also applies to such words as
   ought bought and found round
   row cow and the like

4. The children find a need to use what they have learned in reading about the letter combinations that make a new or different sound. For example:
   ch sh th gh (when not silend) and the like.

5. The children make the discovery that phonics ("letter sounds") is only a general help and cannot be used alone without context and thereby learn that context is of first importance. For example:
   He put his hat on his head and went out.
   The 2 vowels do not have the sound we would expect, but the context of the sentence gives us the clue.

6. Words of more than one syllable are divided into parts and instead of listening for separate sounds we now listen for sound units and compare them with the written word. For example:
   to day sis ter yel low fun ny my self

7. Suffixes and prefixes are learned as sound units. For example:
   ing ed er ness tion and the like

8. The doubled end letter is noted in writing certain words. For example:
   (drop) dropped (run) running (grab) grabbed (drag) dragging

9. There is no attempt to teach a "rule" because rules that do not hold good in all cases only serve to confuse. The children do, however, examine groups of words having like sounds and letter units and sometimes learn several words as an outcome of the need to spell one word. (See Phonics, p. 101.)

READING: CAN HE LEARN TO READ?

The school has probably committed more sins against the child in the name of "teaching reading" as a subject than can ever be estimated. The tragedy is that the "hurts" the child sustains at the hands of this subject leave permanent emotional scars. It often sets his feet on the progressive path from tardiness to truancy and on to delinquency. Too often our intention to teach the child to read has actually resulted in teaching him to fail.

In the light of this unfortunate experience the first thing to do is to examine our thinking and our motives. What do we intend to do? Teach reading or teach the child? If we are to teach the child rather than the subject:

We must first find out about his developmental readiness for beginning to read.

1. Do we know that he has sufficient mental age to lead us to believe that he may be ready to learn to read? Does he show any other evidence of being ready?
2. Has he a language readiness for beginning? Can he understand a spoken sentence without it being necessary for you to resort to gestures or "pidgin"? Does he speak in sentences?
3. Can he recall the sequence of a simple action story?

We must find out about his physical readiness for beginning to read.

1. Is his vision good?
   Remember that far-sightedness or muscular imbalance does not show up on the Snellen chart vision test.
2. Is his hearing impaired?
3. Is he a victim of malnutrition?
   This always causes lack of alertness and power to sustain attention.

We must discover whether or not he has found any use for reading.

1. We must examine our daily program to see whether or not the child will find in it any reason to read beyond that of satisfying the teacher, avoiding a scolding or protecting himself from the smug attitude of his classmates.

Only if the answer to all of the above is YES, and if we have an interesting program ready for him, then and then only are we justified in beginning reading instruction. There are, however, two additional questions we must ask before we begin: (1) What are his interests now? and (2) What kind of reading will he have time to learn to use before he leaves school?

What are his interests now?

1. His interests will be those of children his own age (C.A.). An examination of available pre-primer material will probably show us that it is unsuitable for any child older than 6 or 7 years. Some "mentally retarded educable" children are anywhere from 8 to 12 years old before they are ready to begin to read and will not be interested in pre-primers at that age.

What kind of reading will he have time to learn to use before he leaves school?

1. If he is 10 or 12 years old when he reaches a mental age of 6 years:

   The 50-60 I.Q. child's rate of mental growth will be only 50-60% of that of a "normal" child. This means that he will not be likely to achieve (read with ease and comprehension) more than a 2nd or 3rd grade level by the time he is 16 years old and ready to leave school.

   A child whose I.Q. is below 65 will seldom gain enough mastery of reading skill to carry over into ordinary out-of-school reading material such as newspapers and magazines. Though he may be able to acquire an ability to read 2nd or 3rd grade stories in school, this skill will tend to disappear through disuse after he leaves school. He probably will become an illiterate in adult life because there is no adult reading material at primary grade level.

   Emphasis in teaching reading to this type child should be on protective and informational reading. His reading vocabulary should be that of the signs and directions he meets in daily life. Skill in reading to follow directions should be developed to the top level of his capacity. He should learn as far as he is able, the simple vocabulary of family and friendly letters. If, in addition, he is able to learn enough words to be able to read the "funnies" in the newspaper and to sound out enough of the words in printed comments under the pictures of picture magazines, he will be very happy. We must always be ready, however, for him to surprise us by progressing much faster than we thought he would.

   All other things being equal these children will usually be ready to begin reading instruction between the ages of 10 and 12 years.

2. If he is 8-9 years old when he reaches a mental age of 6 years:

   The 65-75 I.Q. child's rate of growth will be only 65-75% of that of a "normal" child. This means that he will not be likely to achieve (read with ease and comprehension) more than a 4th or 5th grade level before he leaves school at 16 years of age. Reading material used in school should be of the informational type. Story material should be leisure time reading at a level of ease rather than at a work level. He should do a lot of independent reading at a level of ease to provide the necessary practice in word attack skills and repetition of known vocabulary needed for retention.

The child who achieves 4th grade level will have acquired enough of the mechanics of reading to read the "funnies," some sports items and newspaper headlines. If reading has been a pleasant satisfying experience in school, he may be expected to continue reading after he leaves school. He may want to improve his skill by attending an adult reading class.

The child who achieves a 5th grade level should be able to read newspapers and popular magazines with fair comprehension. If reading has been a pleasant and satisfying experience for him in school, he may be expected to continue reading out of school. He will probably remain literate throughout adult life becuse he will get daily practice in the use of his reading skill. He will usually be ready for reading instruction around 8 or 9 years of age. This child, however, is very apt to have been discouraged, if reading was forced upon him in the first and second grades. We, therefore, frequently find that he has not even made a start in reading when he enters the special class.

If, however, this child was guided through a sequencial readiness program until he reached a mental age of 6, he will now enjoy learning to read. As an adult he will read for pleasure as well as for information. He may, as an adult, want to improve his reading skill by attending an adult education class.

Armed with this insight and information, the teacher is ready to plan a reading program for her class. She will say:

John is _______ years old.
He has _____ more years in school.
He now has a mental age of
years.
His learning rate (I.Q.) is ______ .

He now reads at a ______ grade level.
He is (or is not) at a reading level
appropriate to his mental age.
He is interested in ___ kind of things.

On the basis of the above, the teacher will:

1. Decide what type of reading skill will be of most value to the child in terms of his ability to carry the skill over into adult life.*
2. Select or adapt reading material interesting to a child of his age but on the grade level on which he is now working.**
3. Decide whether or not the child needs remedial instruction or just to be helped to grow in skill from where he is.***
4. Observe how the child seems to learn best and then try any reading method to which the child responds most favorably in terms of happiness and reading progress.

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* See, What kind of reading will he have time to learn to use before he leaves school? p. 67.

** See High Interest-Low Difficulty Reading Material, p. 96.

*** See Inventory, p. 69.

A READING INVENTORY

A Means of Discovering Where the Child Is

To Find Actual Working Level in Books

1. Make out the usual alphabetical class list, recording each child's reading grade level (from the test record in his folder) beside his name.

2. Now reorganize the list in order of grade levels, beginning with the name of the child having the highest score. Make a tentative three group division of this list by drawing two lines through the list at middle grade levels. For example, suppose the highest score is 3.4 and the lowest 0.0. Group the children having 3.4 to 2.5 in the highest group, those having 2.5 to 1.5 in the middle group, and those having 0.0-1.5 level in the lowest group. This is only a rough "first" grouping measure as you will discover when you proceed further with the reading inventory.

3. Select three sets of readers from a good basic series for each of the three groups as follows:

Set 1.	at grade level
Set 2.	one grade level below
Set 3.	two grade levels below

To illustrate from the above example, the selection of readers would be:

Group I	Group II	Group III
an easy 3rd grade book	an easy 2nd grade book	a pre-primer
a 2nd grade book	a 1st grade book	a readiness booklet
a 1st grade book	a primer	a reading readiness test

Now sitting down in a small informal friendly group of children (4 or 5) from one of the three tentative groups, proceed to discover the actual working level of each child in terms of vocabulary load and comprehension, as follows:

Give the group the selected set of books one grade below their recorded reading level. Discuss the pictures in the story with them or show pictures to orient them to the material of the story. Then let each child read a page or two (sight reading) while the others listen. Help the child immediately with any word he does not recognize. Do this casually so he does not become ill at ease. Keep the situation a friendly, helpful (not a testing) one. Let every child have a turn, each one reading the succeeding page or two of the story.

1. If the vocabulary of the story is entirely too difficult, don't embarrass the children by forcing them to pick their way through word by word. Complete the story by reading it to them. Then get them to talk about it with you. In this way the children will not be embarrassed by their

failure and you will discover whether or not, in addition to the too difficult vocabulary, the ideas in the story were beyond their comprehension. Then immediately put these children to work on some non-reading activity in which success is assured.

2. If a group reads the selected story with ease, discuss it with them to check their comprehension and then proceed at once to try them out in the book a grade level above the first one. Their success with the first selection will carry them on to their best effort, with the more difficult one. Always, of course, discuss the story with them to find out how much they understand of what they read.

Continue working with the groups, each time reading in a successively higher or lower grade level book until you find each child's actual working level. Material is at a good working level when the child understands what he reads and needs help with about two words per running hundred words. Use your findings as follows:

1. If the child needs help with only one or two words per running hundred (exclusive of names or unusual words) the book is at a good working level for the child. This will be the grade level of the reader you will select to begin reading instruction, if you can find a book at this grade level that will interest him.* This is the grade level to which you will adapt** interesting reading material for him.

2. If the child reads with ease and shows by his answers to your questions that he understands what he has read, the book is at a "level of ease". This is not his working level but will be a good level for library or leisure time reading, if you can find any material at this grade level that interests a child of his age. It will be the grade level on which you will keep bulletin board reading. Any adapted stories on the subject of the unit which you may want him to read independently should be kept at this level, also. He needs much experience in reading at a "level of ease" as a means of increasing his self-reliance and providing practice in using this skill.

   To find this child's working level, you will need to give him a book a grade level above the one which he reads with ease. If that book proves too easy, also, select one at a still higher level until you find a book in which he needs help with one or two words per running hundred. This book will be at his working level. Any books you select or any adapted material should be at this level.

3. If the child needs help with more than two words per running hundred (exclusive of names or unusual words) the book is too difficult for him. Try him later in the day or the next day with a book a grade level below and continue to try him out in books successively easier until you find

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* See Interesting Reading for Mentally Retarded Educable Children, p. 99.

** See High-Interest-Low Difficulty Reading Material, p. 93.

a book in which he needs help with not more than about two words per running hundred. This will be his working level.

As you listen to each child read a book successively easier or harder, be sure to check for comprehension. You may find a child good in comprehension and so poor in word recognition that he must work in a reader one or two grades lower. This discovery is your cue for lesson planning with emphasis on word recognition. You will find other children who are able to "read" the words in a book without understanding what they read. This will be an indication that you must provide easy reading material with emphasis in your lesson planning on reading for comprehension.

In the process of finding each child's actual working level in books, you will discover that the class has regrouped itself, some children shifting to the higher, and others to a lower group.

To Make a Vocabulary Inventory

A Basic Vocabulary: The Dolch words make up from 50-75% of all the running words in any written material (60-75% of running words in first readers). Find how many of these words the children recognize. These words are very important. They are the "service words" of every sentence: pronouns, adjectives, adverbs, prepositions, conjunctions and common verbs. We should know exactly how many, and which, of these words the child recognizes at sight so that we may teach him the entire list as quickly as he is capable of learning them. If sight recognition of these words is acquired by the child, the teacher's problem of adapting material to his reading level is simplified.

An Individual Vocabulary Test

Give the child the pack of Dolch words on cards. Let him sort it into two packs; the ones he knows and the ones he doesn't know. Let him read to you the ones he "knows" as you check them off against an alphabetical list.

A Group Vocabulary Test

Use the Basic Sight Word Test.* A test paper on which the child selects from boxes of four words each, the one you read from your master list. This test can be given to the whole class in from four to eight sittings of about 10 minutes each. Record the results. A Progress Chart type of record is practical because new words can be checked off as learned. This record then becomes a running inventory of words the entire class or an individual child recognizes at sight.

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* Can be obtained from Garrard Publishing Company, Champaign, Ill.

Dolch Word Progress Chart

	Charles	Mary	Tom	Clara	Johnnie	
a						
about						
after						
again						
all						
always						

A Vocabulary Inventory of Reading Materials: If you are using a reading method by which you teach all new words before giving the child the materials to read, you may find which words the children of the group need help with by conducting a vocabulary inventory test. This may be done either individually or in the group as described above for basic vocabulary testing. Keep a running inventory record of the words the child recognizes to guide you in lesson planning and in selection of words when adapting stories to his reading level.

DEVELOP A READING PROGRAM FOR EVERY CHILD

Before He is Ready for Books

The "mentally retarded educable" child may be in school two or more years before he has a mental age of 6 years. What shall I do with him before he is ready to begin to learn how to read? Fill every school day with vivid experiences;

1. **Doing things, seeing things, handling things and asking questions about things.**
2. **Talking about what he is doing, remembering what happened, guessing about what comes next.**
3. **Recording experiences in sequence by means of pictures in picture writing.**
4. **Sharing materials, helping each other, enjoying each other's contribution to the activity.**
5. **Recalling past experiences, finding things in the new experience that are like the old.**

An Experience

To illustrate: The class was active in fixing up their room. The teacher decided to buy some goldfish for the room. There was no nearby pet-shop so the teacher brought the fish to school. The children found a goldfish bowl. They thought it was a flower bowl. The teacher told them it was for fish.

Soon after the next school day began, the monitor brought a box to the room. There was a note with it. It said:

"Some fish are in this box.
They want a home.
They like a fish bowl for a home.
Do you have a fish bowl for them?"

A child took the box and the note. He asked the teacher to read the note to the children. They remembered the fish bowl. They ran to get it. A child put the note on the daily news board. John opened the box and peeked in. All the children peeked in. They saw fish in some water. Bess poured the fish into the bowl. Fred carried the fish bowl to the window ledge where the children could see them all day.

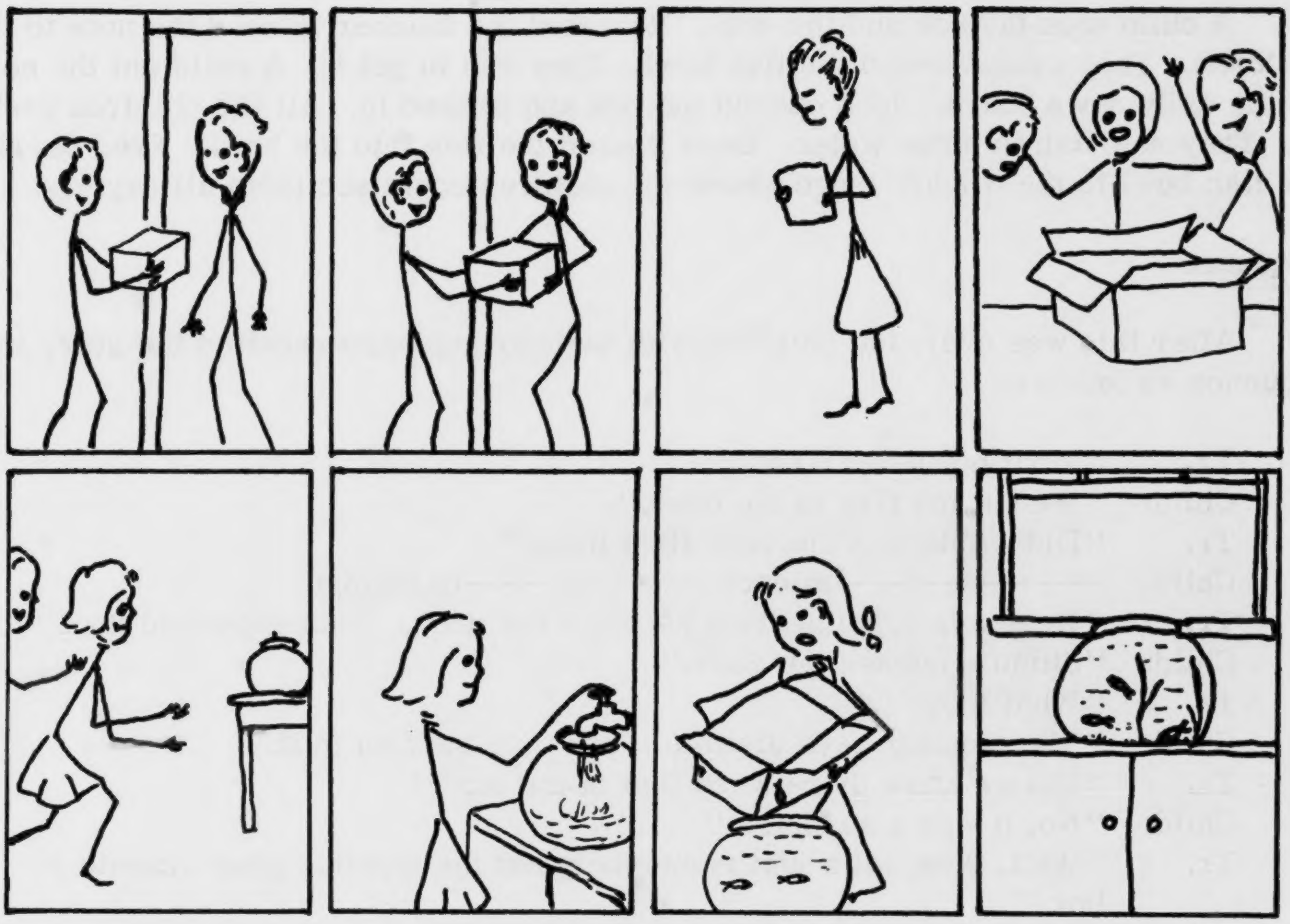
Sequence

After this was over, the children with teacher guidance recalled the story in sequence as follows:

Tr. : "What happened first?"
Child: "We put the fish in the bowl."
Tr. : "Did we do that the very first thing?"
Child: ---------------silence--------------(thinking)
Tr. : "Remember, we heard a knock at the door. What happened then?"
Child: "Jimmie opened the door."
Tr. : "What next?"
Child: "The monitor gave Jimmie a box with the fish in it."
Tr. : "Did we know there were fish in the box?"
Child: "No, it was a surprise."
Tr. : "Well, then, let's just remember that the monitor gave Jimmie a box."
Child: "And a note to read."
Tr. : "Who read it?"
Child: "You did. You read it to us."
Tr. : "What did the note ask us?"
Child: "If we had a fish bowl. And we ran to get it."
Tr. : "What next?"
Child: "We put the fish in."
Tr. : "But John and Mary did something first."
John : "I peeked in."
Child: "We all peeked in."
Tr. : "Mary, what did you do?"
Mary: "I filled the bowl with water."
Fred: "I put the fish bowl on the window ledge."
Tr. : "Yes, but Bess did something first."
Bess: "I poured the fish into the bowl."
Tr. : "Then, Fred what did you do?"
Fred: "I put the fish bowl on the window ledge."
Tr. : "Tomorrow, maybe we can have some pictures to help us remember our nice surprise."

Recall - Telling the Story in Sequence

The teacher prepared line or stick pictures of the principle action in the story on 4 x 4 cards.



The next day she and the children recalled the story with the pictures as clues.

First they read the picture story in sequence as the teacher put it up in the chart holder one at a time.
Then they each took a picture and placed it in the chart holder when it fitted into the story.
There were many times when the teacher had to guide the children to remember the correct sequence.
After several days of practice they could tell the story in sequence by means of the picture.

Recording the Experience

Then they made a book. At this time each picture was pasted on a page. In the telling and retelling of the story, each picture became identified with an explanatory sentence. For example:

Come in.
Thank you.
Here are some fish. Do you have a fish bowl?
We peeked in the box.
We ran to get the bowl.
Mary filled the bowl.
Bess poured the fish into the bowl.
Fred put the fish bowl on the window ledge.

Each sentence was printed under its picture as the children dictated it and watched the teacher print. Now the book became part of the library to be looked at and retold over and over by individual children for the fun of recalling a pleasant surprise. The "library" grows as experiences accumulate.

A Foundation for Reading

This type of experience, where observation is guided and recall is developed, builds up a valuable foundation for reading when the child becomes mature enough to begin. It builds speaking vocabulary, ability to hold the sequence of a story in mind, and it sets an attitude toward reading as meaning something and telling about something.

The above account does not represent a beginning stage of this type of experience. The first experiences should be limited to 2 or 3 actions. For example:

1. We heard the bell.
   We ran out.
   We played games.
2. Mary cut her knee.
   The nurse put a band-aid on it.
   We all went out to play again.

The school day of a child is full of little sequences of actions that he is quite unconscious of unless his observation is directed to them. They carry the meaning of his day just as stories in books will carry the meaning of other children's days to him later when he is mature enough to read. Some opportunities outside the classroom are:

1. Trips around the school building and campus.
2. Trips into the community to observe something on the interest level of the child.
3. Things the child makes: these make excellent foundations for reading to follow directions.

We must remember that experiences that are full of action and surprise or suspense, followed by pleasure, are most enjoyed by the children. Later, if he acquires enough skill, these are the kind of stories he will like to read. These are the kind of stories most adults prefer, also.

The above is only one aspect of a Reading Readiness Program. Aside from developing the awareness of sequence in an experience, it builds an attitude toward reading as being:

1. Connected with feelings of pleasure.
    a. recall of pleasant experiences.
2. Connected with his own experiences.
3. Recording of events.
    a. about what we did; how we felt when we did it.
    b. about things that are happening or that we want to happen.

Other aspects of the Reading Readiness Program are development of ability to:

1. See likenesses and differences.

    Games of matching (ability to see likenesses).
        Using objects, pictures, geometric figures, letters, words.
    Games of finding the one that doesn't belong (ability to see differences).
        Using objects, pictures, geometric figures, letters, words.

2. Classify familiar things.

    Games of sorting objects or pictures into families (classification):
        All the cats, all the dogs, all the boys, or girls.
        All the people, all the trees, etc.
        All the things that can talk.
        All the things that can move.
        All the things that we eat, etc.

3. Supply a missing part to a picture.

    Pictures to complete.
        Cats without whiskers.
        Dogs without tails.
        Rabbits without ears.
        People without eyes, or arms, or a leg, etc.

4. Use a wider speaking vocabulary.

    The goal of increasing the child's speaking vocabulary should run like a thread throughout each day's activities. Arithmetic, social studies, science, health, safety, art, music, shop, cafeteria, recreation each have a contribution to make in building his speaking vocabulary.

    Vocabulary building activities.[1]

        Finding the smallest leaf or tree, or stone or the like, on the playground.
        Finding the biggest leaf or tree, or stone or the like, on the playground.
        Finding the smoothest stone, the roughest stone.
        Digging a deep hole, a deeper hole, the deepest hole.
        Finding a long stick, a longer one and the longest stick of all.
        Throwing stones far, farther, farthest.

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[1] Lee, Doris May, Learning to Read Through Experience.

Making and flying kites.

Choosing the one that flies high, higher, highest.

Note: There are other opportunities for enriching vocabulary suggested under arithmetic for children below 6 years mental age.

5. To develop an alertness of things about him insofar as he is capable.

Games of hiding: an object in, on, under, by, between, on top of, in the middle of, on the bottom of.
Games of feeling: identifying a familiar object or a classmate by feeling while blindfolded.
Games of tasting: identifying sugar, salt, bread, cocoa, jelly, butter, etc. while blindfolded.
Games of smelling: identifying flowers, food, familiar things while blindfolded.
Games of hearing: locating a bell or other sound while blindfolded.
Listen to what the music tells us to do: run, clap, skip, etc.
Recognizing a classmate by his voice. For example:
Child : "Good morning, John."
Blindfolded Child: "Good morning. You are Billy Young."

The above are only a few of the possibilities within the school day's activities. There is no attempt here to outline a Reading Readiness Program. The teacher is referred to curriculum guides in current use in the schools for help in developing a sequential building of reading readiness. In the use of any curriculum guide, the teacher of the "mentally retarded educable" child will need to keep in mind the child's dependence on first-hand experiences, on careful pacing, and repetition, for learning.

The teacher will find a very practical little book by Lee[1] very helpful. In addition to a careful and easy-to-read explanation of what really constitutes "reading readiness", it includes many very interesting activities for developing "readiness". It was written with "normal" children in mind but needs little adaptation for use with our young "mentally retarded educable" children.

The teacher must always remember that the child's experiences must be those of his own age-interests. She will begin with some aspects of school life, but she will range far afield into the community. The older the child is, the more thirsty he will be for information; the younger he is, the more interested he will be in the activity of an experience.

This is true also of materials used to develop other aspects of reading readiness. For example:

He will be more interested in supplying the missing part of an airplane picture than of a cat or rabbit.

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[1] Ibid., p.

> He will reject as "baby stuff" such an activity as cutting out pictures of "all the cats" or "all the things we eat." But he will enjoy having his class divided into committees, each group to hunt in magazines for a certain type of thing.
>
> For example:
>
> Things that run by an engine;
> Things that use electricity, etc.

Many other very practical suggestions for guiding pre-reading experiences along the interest level of the older mentally retarded educable child will be found in Kirk.[2] Your attention is called particularly to his discussion of the need for language development.

In following some of these suggestions, the resourceful teacher will discover many other experiences that will contribute to the "mentally retarded educable" child's reading readiness. This kind of program will make the school years, before he reaches maturity for beginning reading, full of happy informative successful hours.

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[2] Kirk, Samuel, Teaching Reading to Slow Learners.

DEVELOP A READING PROGRAM FOR EVERY CHILD

The Child Who Is Now Ready For Books

If a child has successfully mastered the skills of a good reading readiness program, has an adequate speaking vocabulary, speaks in sentences; and if through many first hand experiences and other activities he has built up enough background of experience to help him understand what he will be reading, then he is ready to read.

By the time he has reached this stage of readiness, his M.A. is usually that of a six-year-old child. If he has no physical disabilities that would prevent his progress, if his environment at home is not causing him to be too emotionally upset, if you are able to totally accept him as an important person, and if you believe you can teach him--then he is off to a good start.

Proudly and at his own rate of mental growth he will make slow but steady progress. The degree of his success in reaching his highest reading potential will depend on your (his teacher) ability to:

1. **Pace the work to his rate of learning.**
2. **Plan and follow through on a well-organized sequential build-up of the various reading skills.**
3. **Provide him with reading materials suitable to the interest of children of his own age (C.A.).**

In planning a reading program for a "mentally retarded educable" child we must consider his live age (C.A.) interest, his rate of learning (I.Q.) and the number of years he has left for schooling (See page 67). We find these children tend to fall into three groups each of which presents a distinctly different problem to the teacher who has the responsibility for starting them on the road to success in learning to read. These groups are:

1. **The young child who is ready to read and whose rate of mental growth (I.Q.) gives promise of acquiring sufficient reading skill to carry over into adult life.**
2. **The older child whose rate of mental growth has been so slow as to make ordinary book reading instruction impractical. He has so few years left before he leaves school that he probably will not be able to acquire sufficient book reading skill to be of use to him in adult life.**
3. **The discouraged "mentally retarded educable" child whose sense of failure adds an emotional handicap to that of mental retardation. He may have a mental age of six years to ten years or more and still be working at a beginning first grade level. This child, however, will finally rise to his highest potential if we restore his self-respect with large daily doses of success.**

Suggestions that follow for each of these three groups are intended only as guideposts for the teacher through the child's earliest stages of learning to read.

THE YOUNG "MENTALLY RETARDED EDUCABLE" CHILD

The 8-9 year old: Two Different Approaches to Reading:

The child who has an I.Q. of 75-70 usually does not show readiness to read books until he is age 8 or 9 years old. This child presents a problem in (1) selection of materials, (2) method of presentation, (3) in planning interesting work over the long period of time which it will take him to progress from one reading level to the next. The following suggestions are made to meet the needs of this child by either (1) adapting regular grade methods or (2) by the use of Fernald's kinesthetic method.

Adapting Regular First Grade Procedures

If this child was placed in a special class when he was 7 years old, he should have had a reading readiness program rich in activity, observation and information. Building on this foundation, the teacher will usually need only to adapt regular first grade procedures to the child's slower rate of learning. For example:

He will remain at the chart stage longer than children of regular first grade.
He will need to read many more stories at a pre-primer and primer level.
He will be able to learn fewer words in one word study lesson and will need much more repetition.
It will be necessary to let the phonetic character of words dawn on him gradually. It may be a long time before he is ready to learn to use phonics as a tool in word recognition.

In using regular first grade techniques for developing chart material, be careful that the chart does not look like a first grade chart. Children eight or nine years old are offended and humiliated by the use of obviously first grade material. They will, however, be delighted to work with any of the following substitutes for the typical first grade chart.

THE MOVIE	Stories printed on a "movie" roll. Making the box for the movie machine, drawing and selecting pictures to illustrate the movie, showing the movie and reading the lines under each picture, are all activities enjoyed by any child of the above ages. If more than one "movie machine" is made, the children will never tire of putting on an old roll to review an "old" experience (story). This is much more interesting than library books to many mentally retarded educable boys.
THE TRANSPARENT PROJECTOR	Stories projected on screen or blackboard. The story can be typed on cellophane and projected on the blackboard or screen without darkening the room. This has the advantage of lending itself to such exercises as underlining or circling word groups or words with chalk.

THE OPAQUE PROJECTOR

The story can be typed below an illustration placed in the opaque projector and thrown on a screen in a darkened room. This has the advantage of being a piece of reading material that can be placed on the library table or posted in the room for re-reading by interested individual children.

THE FUNNIES

The use of stick-picture drawings with the ''funnies'' type of quote is of never failing interest to the average boy regardless of age. The advantage of this type of material is that the meaning and feeling tone is dominant because the figures carry the action while the quotation carries what the people in the story say about what is happening. It is always a story in action--present tense and first person--all of which makes comprehension easy. The ''funnies'' are fascinating reading material for boys of any age.

Be sure that each ''chart story'' is short. The first stories should be one, two, or three lines long. It is better to have several illustrated ''stories'' of one experience than one several lines long.

In the breakdown of the chart story into phrases and then single words for study, make the following adaptations of regular grade methods:

COMMONLY USED WORDS

Give special attention to the most commonly used words.*
Provide individual children with each ''new'' word typed (primer typewriter size) on a small card. These cards should be kept by the child in his word file box.
Substitute for the usual first grade, building up and matching of phrases and words some such exercises as the following:

- A mask to hide all but the word groups or words which are to be studied.
- A sliding frame to expose only the word group or word called for each time.
- Word groups or words typed on cellophane slides and projected on the blackboard.

MANY DIFFERENT CONTEXTS

Use the commonly used words of each story in many different contexts around the room.

- On the bulletin board. (Change this daily to create and hold interest).
- In messages to individuals or to the class.
- On materials of the unit. (This might be in the form of directions, explanations or questions).
- In new stories attached to pictures. (These might be shown in the opaque projector, read by the entire group and then placed on the library table. These stories will use known common words from previous reading units).

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* See Dolch List, p. 54, 55.

A GOOD MANUAL

Accept the guidance of a good teachers' manual for sequential build-up of reading skills in this beginning-to-read stage. Do not, however, attempt to use the actual reading material of this series because these pre-primers were written on the interest level of the average six-year-old first grade child. The "mentally retarded educable" child will be much older than six years by the time he arrives at a mental age of six and will naturally have outgrown these interests. He will be interested in the same things as the other children of his own life-age.

OLD VOCABULARY NEW CONTEXTS

Prepare a series of "stories" during the development of each unit (Social Studies, Health, Safety or Science) using a carefully controlled vocabulary consisting of words the children recognize readily plus one or two "new" words per story. This type of reading activity gives the child the joy of discovering that he can "read" new material and the satisfaction of discovering an unknown word, learning it, and adding it to his present usable vocabulary. This type of reading material provides foundation experience for the beginnings of specific reading skills such as reading to find the main idea of a reading selection, to note details, and to follow directions.

The teacher will, of course, always have to adapt both the material and the procedures she uses in presenting the material to the life-age interests and sense of dignity of the particular group with whom she is working.

Using Fernald's[1] Kinesthetic Method:

This can be followed without any adaptations for the "mentally retarded educable" child. A description of Fernald's method will be found in Chapter V which describes the four stages in the development of reading skill; and in Chapter IX which gives a full description of the use of this method with beginning first grade children in Los Angeles and Pasadena Schools. It contains 37 photographs showing the children's actual work. It also contains a study of the vocabulary of the children at the end of the first year and a follow-up report on these children six years later.

This method has several outstanding values:

a. It is valuable to the child with a foreign language background, in that it correlates his daily experiences in speaking, writing and reading. He learns all three as part of the same activity; the habit of using good English is a natural outgrowth of his day-by-day writing about, and reading about his own experiences.

b. It is of never failing interest to the child because he is the author of all he reads. It is always about the particular things that interest him at the present time.

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[1] Fernald, Grace M., Remedial Techniques in Basic School Subjects.

c. It is an active activity. He thinks what he wants to say; writes what words he can; gets up to go to the teacher for a word he needs; traces it until he can write it without copy; files it in his word box; again writes what he can and repeats the above when he needs another word from the teacher and so on. He draws pictures or diagrams to illustrate his story. He reads it to other children. The whole "reading" lesson is characterized by the kind of personal "busy-ness" that is natural to children.

d. Phonics is a natural outgrowth of the method of learning a word.

e. Meaning is always high, thereby fostering growth of reading comprehension.

f. This method does away with the need for searching for, adapting or originating material on first grade level of difficulty for the child who has passed the interest level of books at his reading level.

g. Every child grows in reading power at his own pace.

This method is not without certain administrative difficulties. For example:

a. The child's work must be typed for him to re-read within twenty-four hours if he is to experience satisfaction of growth in ability to read. If the teacher cannot type or does not have access to a typewriter and this cannot be done, the child's interest may die and the method will be unsuccessful.

b. Every child must have a word file box. Words are filed in alphabetical order. The teacher must help with this until the child can file these words independently.

c. The teacher must revise all her ideas of the "reading period" and be willing to sometimes be merely the supply of all needed new words in large script or manuscript on cards for the child to trace and then to file in his box.

d. The teacher must have a certain characteristic orderliness which will make it possible for her to see to it that every child's file box is in order and that every new "story" is placed in the child's own personal book as soon as it has been typed.

The advantages in terms of motivation and success far outweigh any difficulties in establishing the necessary routines for smooth handling of this radical departure from the traditional "reading period".

To make this method a real "fun-way" of learning to read, to provide the practice and repetition necessary for retention, the teacher must:

a. Enjoy the children's stories and consider them important.
b. Plan frequent periods when the children share their experience by reading their stories to each other.
c. Give each child frequent opportunities to "read" all of the words contained in his personal file box and to re-learn those he has forgotten.

The teacher must also be alert to recognize when a child is ready to begin each of Fernald's four steps[1] in learning to read. The mentally retarded educable child is not always aware that he is ready to go on. He usually needs the teacher's encouragement and guidance.

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[1] Ibid., Chapter V, Four Steps in Learning to Read, p. 35.

THE OLDER "MENTALLY RETARDED EDUCABLE" CHILD

Suggestions for Meeting His Minimum Reading Needs:

The low I.Q. "mentally retarded educable" child who is from ten to twelve years old before he reaches a mental age of six presents a very different problem than that of other children of less limited ability. His rate of learning (I.Q.) and few remaining school years make it improbable that he will be able to acquire sufficient reading skill to carry over into adult life. This child will probably not be capable of acquiring more than a second, third, or easy fourth grade reading level before leaving school. Even though he was able to master the vocabulary of the more difficult 3rd grade readers, he may not develop enough mental maturity for good comprehension. Because there are few adult reading materials at this primary level, he will tend to lose even this amount of reading skill through disuse after he leaves school. If his reading instruction is limited to learning to read the stories in primary grade books, he will usually soon forget the little he learned in school and become an illiterate adult.

It will, therefore, be necessary to teach this child a certain type of reading which might be called protective and informational reading. Before he leaves school, he should know how to read certain signs and directions. He should know what these mean in terms of use. He should also be able to read family letters.

Signs and Directions

The occasions for learning to read signs will arise out of social studies, health and safety units. The fact that he often sees and reads these signs out-of-school will make retention easy.

The methods used to help him read signs and directions must be suited to the life-age and sense of dignity of the child. The use of the camera, transparent projector, the opaque projector, and reproduction by drawing or models of the various locations and materials on which these signs are found, is recommended. Some materials for these reading experiences will be:

1. Labels on materials within the classroom.
2. Signs found within the school or on the campus.
3. Signs found in the community on trips connected with the unit being developed.
4. Signs brought in by the child from his own neighborhood or home.
5. Signs the child's father or mother see daily in the place where they work and which they have copied for the child.

The following are some common signs that were brought in by individual children of one class or observed by the class on trips in the study of city services: Police, Fire, Recreation, Health, etc.

Good Citizenship Signs

Do Not Enter
Do Not Handle
Do Not Talk
Do Not Touch
Kapu
Keep Out
Men
Move to the Rear
No Fishing
No Swimming
No Trespassing
Private Property
Quiet
Women

Directions

Bus Stop
Entrance
Move to the Rear
One Tablespoon After Meals
One Teaspoonful Before Meals
One Teaspoonful Every Morning
One Teaspoonful Three Times a Day After Meals
One Teaspoonful Three Times a Day Before Meals
Out - In
Pull-Push

Safety Signs

Beware of the Dog
Danger
Do Not Run
Do Not Use Near Fire
Exit
Explosives
For External Use Only
No Left Turn
No Right Turn on Red
No Smoking
One Way
Stop
Stop, Look, Listen
Turn Right With Caution After Stop
Not for Internal Use

Important Places

Capitol Building
City Hall
Federal Building
Iolani Palace
Navy Housing
Oahu Railway Depot
Palama Settlement
Police Station
Post Office
Queen's Hospital
St. Francis Hospital
Tripler Hospital
Kaiser Hospital
Kuakini Hospital

Streets

Ala Moana
Alakea
Bethel
Beretania
Bishop
Cooke
Dillingham
Fort
Hotel
King
Kalakaua
Kapiolani
Merchant
Nuuanu

Places

Ft. Shafter
Kaimuki
Kalihi
Kapahulu
Koko Head
Liliha
Manoa
Punahou
Waikiki
Punchbowl
Pearl Harbor

They should be able to read destination signs on city buses. In addition to street, building, property and public utility signs, these children should have much experience with reading directions for using various common personal and household articles and for preparing food. They should also be able to recognize on sight the names of common items of food.

Notes, Letters and Messages

Another important reading need of any person is the ability to read informal friendly or family notes, letters or messages. This skill is a matter of great satisfaction to a person either as an adult or as a child. Anyone who knew the illiterate serviceman during the last war will not doubt that it is important to the morale of anyone away from home to be able to write and read family letters. Dolch found in a study of words used most frequently in all written material that there are 220 words that make up from 50-75% of any given piece of reading material. These are the little words that carry the meaning of any sentence. If the low I.Q. child acquires these words during his school years, he will, with the addition of a few local words and common nouns, be able to read or write simple notes and letters. A list of these words will be found under Spelling, p. 53-55.

Other simple reading needs of this low I.Q. child are listed and starred as minimum essentials under Arithmetic and Language.

The Vocabulary of Signs

The teacher will often be amazed to discover that some children who cannot "read" will readily read many of the commonest street or bus signs. These children, however, seldom recognize any of the words of a sign when presented separately or in another context until each sign is broken down into its word units and taught in word study lessons. Word study lessons should provide the child with:

1. The vocabulary of signs, directions and common informational reading.
2. The vocabulary of informal notes, letters and messages.

Any word study method "that works" is the right one to use with this child (as with any child). Some children learn by use of the usual visual method, others will profit by phonics, some will need to use Fernald's kinesthetic method. By patient observation of how the child learns, the teacher will find a method by which each child will make progress according to his rate of learning.

Children who are able to profit by phonics should have careful systematic training in the use of this skill. They will need:

1. Guidance in observing like sounds and certain letter combinations in words contained in the signs, directions, letters and the like.
2. To know the names of the letters of the alphabet and the sound of the consonants and blends.
3. To know the common sounds for the vowels and combinations of vowels.
4. To be encouraged to attempt to attack new words without teacher help.

Above all, they should realize that every sign, set of directions, note or letter is SAYING something to the person who looks at it. They should appreciate that signs and directions are important and that it is necessary to the personal satisfaction and often to the safety of people to be able to read, interpret and respond to them.

THE DISCOURAGED "MENTALLY RETARDED EDUCABLE" CHILD

The Child Who Hates Books:

This is the child with the habit of failure. He associates reading with failure because he entered school before he had reached a mental age of six and was pushed into reading before he was ready. His present reaction to attempts to teach him to read is one of violent or passive resistance. The form this resistance may take will be influenced by his temperament, plus the amount of mental suffering he has already endured. He usually shows this resistance to reading instruction in one of the following ways:

1. He may become irritable as the reading period approaches. This irritability may be expressed by quarrelsome, noisy, sullen, silly or inattentive behavior.
2. He may become tense and anxious, forgetting all he ever knew about reading and blocking any possibility of learning more.
3. He may retreat from the intolerable situation by announcing that the reading material is "too easy" or "too hard" and refuse to attempt it.
4. He may make a complete refusal to face the situation by becoming a truant.

It is useless to expect this child to begin to learn to read until after the teacher has helped him to re-establish his self-respect and self-confidence. This is much less difficult than one would expect. A successful beginning in reading depends upon the teacher's willingness to start with any type of material or method, to which the child seems to respond favorably, and also upon her own attitude toward the child. She will need to:

1. Regard the child's reading behavior as only interesting--not bad.
2. Sell the child the idea that he can learn by actually proving it to him.
3. Have confidence that she can teach him at his own rate of learning as soon as she has his full cooperation.
4. Be patient until he develops enough self-confidence to show a cooperative attitude.
5. Be able to diagnose any specific reading disability he may have, or any special strengths, and adapt her teaching to her findings.
6. Provide systematic lessons to insure steady progress.

Since this is largely an emotional matter at this stage, there is no one method that will help the child get a start in reading. Experience with this type child shows that he hates, fears, and shies away from the printed page. He associates not being able to read with not being able to remember words. Therefore, any method that begins with vocabulary building rather than book reading will make it easier to re-establish the child's self-confidence.

Experience teaches us that no one reading method works with every retarded reader. The method we choose will depend upon what we discover about how the particular child learns. We will be quick to try another method if one does not work. But having found one method that works with one child, we will be systematic in our use of it so that the child may make real progress at a rate consistent with his rate of learning (I.Q.).

The outstanding characteristics of the two vocabulary building methods briefly outlined here is the change they bring about in the child himself. His defeated "I can't" attitude changes to a proud "I can." Both of these methods have proved to be successful over many years in helping this type child make a successful start in reading.

1. Starting with the Dolch Words

One method of vocabulary building that has been found to be successful begins with introducing a child to a pack of cards containing the 220 Dolch words. If the teacher explains that these are the words that are used over and over again more often than any other words in all the "reading books" and even in newspapers and magazines, it will spark his interest.

A casual comment by the teacher that he probably already knows some of these words followed by a suggestion that he take out of the pack all of the words he already knows and keep them in a separate pile, will set up a situation where he works independently at his own speed while the teacher is busy with the other children. When he is finished sorting out the cards into two packs, the words he knows in one pack and the words he doesn't know in the other, he might want to name these packs the "I Know" and the "I Need" packs.

When the teacher is ready to work with him, she puts the "I Need" pack aside and asks him to read the words in his "I Know" pack. If he reads "saw" for "was", his mistake should not be corrected. If he has included in his pack, words he obviously does not recognize or hesitates over, a casual comment like "You've probably forgotten it. You'll remember it later. Let's put it in a separate pack and we'll work on it later." This is a time for recognizing his successes--not his failures.

If there is a large type typewriter available or even an ordinary type typewriter, he can be set to work, typing with one finger, a list of the words he knows or by typing each word on a separate card for his file. In addition to sparking his interest in the situation by learning to manipulate the machine, this will give his eyes good practice in moving from left to right, a habit he has already shown that he needs when he reversed "was" to pronounce it "saw." It has added value in that it will be an independent activity which will foster in him a feeling of pride.

The method the teacher selects for teaching the remaining words in the list will depend upon the child. A few of these children learn and retain by building a sight vocabulary. Most of them, however, learn and retain better when other senses are also involved as in seeing the word, saying it, writing it. Some children in addition to their mental retardation have a specific reading disability and this will influence the method the teacher uses.

As the pack of "I Need" cards get thinner and his pack of "I Know" cards grow thicker, he will begin to feel the glow of pleasure that comes with success. Soon he will be amazed and happy to discover that he can find these same words in newspapers and magazines. He will delight in bringing in long columns of the newspaper to which he has underlined the words he knows. If the teacher reads this news item to the child and discusses it with him, he will be very proud of the words he could recognize in the piece.

2. Approaching "Book Reading" Through Creative Writing

Fernald's[1] kinesthetic method of building a reading vocabulary works very successfully with some children. The advantage of using this method for the discouraged child is that he does not regard it as "reading". He thinks of it as writing his own ideas, stories, etc. It gradually dawns on him that he has a good sized usable vocabulary which will carry over into books that are on his own level of interest. This method is described by Fernald in Chapters V and IX.

Another advantage is that the child is never faced with the necessity of reading mimeographed material that is either adapted or originated by the teacher, or primer material that is beneath his sense of dignity to read. His first book reading is in books that please and interest him. (In fact he always begins with a book which he himself has chosen.)

If careful systematic records are kept so that the child realizes he is making progress; and if he is guided into each of the four stages[2] of reading skill as soon as he shows readiness, he will show steady growth in reading ability. In the case of children who have long had a mental maturity for reading, several grade levels can be covered in a single school year. For example, a child with a mental age of 10 years who begins at a 1st grade level may be reading at a 3rd grade level at the end of the year. This method, its values and its administrative difficulties were more fully discussed on pages 82-84 in this guidebook.

While both of the methods just described have proved to be very successful with the discouraged "mentally retarded educable" child, you as the child's teacher may, of course, have developed very successful methods of your own and may wish to use your own method.

Experience teaches us that no one reading method works with every retarded reader. The method we choose will depend upon what we discover about how the particular child learns. We will be quick to try another method if one does not work. But having found one method that works with one child, we will be systematic in our use of it so that this child may make real progress at a rate consistent with his rate of learning (I.Q.).

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[1] Fernald: Remedial Techniques in Basic School Subjects.
[2] Ibid., Chapter IX, Four Steps in Learning to Read, p. 35.

PROGRESS BEYOND A BEGINNING READING LEVEL

Suggestions for Carrying the "Mentally Retarded Educable" Child Beyond the Beginning Levels of Reading

The entire foregoing discussion has dealt with helping the child to get a start in learning to read. Much space has been given to this topic because getting this child started is the teacher's first and usually most difficult problem to solve. Once the child has regained his self-confidence and realizes that he is making progress, the chief problems are to:

1. Continue to locate or adapt interesting reading material.
   For help in adapting reading materials, see pp. 96-98.
   For suitable books by grade levels, see pp. 99-100.

2. Continue to make sure the child has a background of experience for reading the story or other material with enjoyment and understanding. If the material does not deal with the topic within the child's environment, he must have an orientation for reading it through seeing and discussing a TV program, a movie, film strips, slides, pictures, models, specimens or something of that kind. Any of these act as a substitute for a first hand experience.

3. Pace the difficulty of the reading material so carefully that the child grows in power steadily and consistently in keeping with his rate of learning (I.Q.). Make a gradual change from one reading level to the next to insure readiness for the longer sentences, the more difficult paragraph construction, and the change to smaller type, in addition to the increased vocabulary load. It is very important to prepare the child for each successively higher reading level in order that he may successfully meet the new challenge.

4. Wisely select the reading skill which he is capable of acquiring and will have the most use for in adult life. Then select appropriate material through which you can teach each skill. Provide enough of this type of material for his practice until he can use it independently in or out of school. Most commonly needed skills in adult life are:

   Reading to follow directions.
   Reading to get an answer to a factual question (note details), or a thought question (make inferences).
   Reading to locate information. For example the use of the dictionary (for pronunciation or spelling), use of the table of contents, index, maps and the like.

The above suggestions are not meant to limit the "mentally retarded educable" child. He should acquire in addition to the skills most commonly needed, any other type of reading skill he shows capacity to learn to use. Skills which will increase his ability to understand and enjoy what he reads will increase the possibility of his becoming a literate adult.

Procedures outlined in the teachers' manuals of the newest reading series will provide excellent lesson planning suggestions for the teacher to adapt for use in teaching a specific skill. In every case, look for the teaching pattern of the series and watch for the grade level at which teaching a particular skill begins. Do not attempt to teach a new skill before the child is ready for it.

Remember always that all instruction in the use of a reading skill is valuable only insofar as it contributes toward our ultimate goal of helping the child become a happy, socially and economically adequate member of his family and community.

HIGH INTEREST--LOW DIFFICULTY READING MATERIAL

Creating, Adapting or Locating Reading Materials

By the time the "mentally retarded educable" child is ready to begin reading books, he is too old to be interested in the content of books written for the six-year-old child and is offended by the illustrations of six-year-old children's activities that accompany the stories.

Typical first and second grade level books contain only stories of the "reading for pleasure" type. These stories together with the illustrations of six-year-old child activities are designed to develop in the child a desire to read. However, they defeat their purpose with children who range from 2 to 6 years older than the six-year-old for whom the first grade readers are designed. Whether or not these children show it by their behavior in class, they carry a feeling of shame in reading this "baby stuff". They don't read the stories to "find out what happened." They read "to get through the books." This works against our goal to improve the child's self-image.

In addition to the inappropriate stories and illustrations, the reading vocabulary increases too rapidly for the slower pace of the "mentally retarded educable" child's learning. When it is necessary to spend days in preparation for reading a few paragraphs, the result is complete boredom and a positive dislike for reading.

These two factors create a need for reading material suitable to the life-age (C.A.) interests and the child's slower rate of learning. This presents a challenge to the teacher to create, adapt or select reading material that will contain stories or informational reading with modern illustrations that meet the requirement for interest at his age level (C.A.) and vocabulary at his reading level.

Publishers are now turning out an increasing amount of high interest - low difficulty reading material in paperback or pamphlet form. These are written especially for the retarded child whose life-age (C.A.) interests exceed his level of reading ability. In addition to supplying suitable reading material with easy vocabulary, paperback books eliminate the stigma of regular grade hardback books which the children consider "baby stuff readers." The child identifies "paperbacks" with adult reading because of the racks of paperbacks he sees in drugstores, supermarkets and other places and is not ashamed to be seen carrying one.

In addition to paperback books there are also a few hardback books written especially to meet the need of a child who is too old to be interested in books written on his low reading level. The main purpose of these books, both paperback and hardback, is however to provide easy-to-read stories to foster the child's interest in reading for pleasure.

If we are realistic, however, we will recognize that few "mentally retarded educable" children (50-75 I.Q.) will ever really read for pleasure. These children's need for this type of reading has been almost totally supplanted by TV stories. For him TV far outweighs the book because he sees the action rather than reading about it and he both hears what the characters are saying but also sees them saying it. As an adult this will also be a chief substitute for reading for pleasure.

However, these high interest - low difficulty books are valuable for other reasons than "reading for pleasure." They make three very important contributions toward the child's progress in reading.

1. The child will identify with children of his own age because the stories are of common interest to the children of that age.
2. The easy vocabulary gives him a feeling of power that is so important to his self-image. As he reads through one book after another -- each on the same grade level but each with different interesting stories, he gets an "I can read" feeling.
3. It provides him with a repetition which is so necessary for any learning we want the "mentally retarded educable" child to retain. The words he has already learned to read occur over and over in many different contexts as he reads through books -- each at the same grade level. This kind of repetition is so much more effective than drill. Someone has said, "We learn to read by reading."

THE NEED TO CREATE OR ADAPT READING MATERIALS

The Beginner Who is 9 to 12 Years Old

At the present time publishers offer very little reading material suited to the needs of the child who is at the lower end of the "educable" scale (50-60 I.Q.). The interest level of most of this material is suitable. However, this low I.Q. child needs much more repetition and an opportunity to see in print -- over and over again -- the words he has previously learned while he was working on a reading readiness level. (See page 72). Therefore, he is in urgent need of material created or adapted by the teacher.

If this child has been in a special class since he was 7 or 8 years old, he will have had not less than 3 to 5 years to progress through a good reading readiness program. In addition he will have learned to read many signs and labels. He will also have a reading vocabulary of certain self-identification words. For example: I - me - mine - my mother - my father - his own name - his father's name (Mr. William Brown), etc.

These are the words he already recognizes when he sees them in print. They are the words the teacher will use over and over again in the short "stories" she creates. In each of these stories there will be a new word for him to add to his slowly growing reading vocabulary. (See the Dolch list of most frequently used words, pp. 54-55.)

The Beginner Who is 8 or 9 Years Old

This child will, like his more limited classmates, have progressed through a reading readiness program. He will also have learned to recognize certain signs, place names and a few Dolch words in print. But he will have accomplished all this at a much faster pace. Publishers are producing an increasing number of books paced at his rate of learning and at an interest level for children of his age. He will enjoy them.

The teacher will, however, need to create additional reading material in the form of stories, reading for information or to follow directions during the process of a unit which is being developed in the class. This reading could be on a level of ease not at a working level.

The Older Child Who Learned to Hate Books

Once this child has acquired a reading vocabulary of several hundred words and has regained his self-respect by finding that he can read,* he will enjoy reading the kind of books now being published for children whose reading level is below their age level.

He will have mastered the 220 Dolch words and unless he has a hearing disability will have learned to use the sound of letters** to attack new words. His first introduction to books or printed informational material should be at a level of ease. In the beginning he will need a great deal of this easy-to-read material at an easy first grade level to foster the growth of his self-confidence and to continue to heal the hurt of his years of failure in reading. At this level it is important that he should read an entire short story or printed informational material every day with only a brief conversational check on comprehension or an interested inquiry as to how he found out how to read some new word in the story. Praise and congratulation for success will be important at this point. This kind of child's most urgent need is to gain and retain a feeling of power, self-confidence. It may be several months before he feels enough self-confidence to voluntarily puzzle over or ask help with a new word. Then we know he is ready to read at a working level where he will meet new words, read longer sentences and learn new reading skills. He will surprise us with his rate of progress.

During the development of a unit the teacher will want to create reading materials related to the unit. Though this child may be working on the same reading level as a group of younger children in the class, he must not be asked to use the material created for the younger group. He will need material written expressly for his own age group and set up in a style and type typical of books for "normal" children of his age.

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* See pp. 54-55 for Dolch list.

** See pp. 101-105 Phonics.

HIGH INTEREST--LOW DIFFICULTY READING MATERIAL

A Guide for Adaptation of Reading Materials

In creating or adapting reading material, the teacher must not overlook a very important factor in the teaching of reading; namely, vocabulary burden and repetition. We defeat our purpose if we become so interested in including highly interesting facts in the material that we discourage the child by a multitude of new words that are seldom repeated within the story, and often never repeated in any following stories. To assist the teacher in writing original or adapting material to the vocabulary needs of children, the following suggestions are offered:

1. Select material at the interest level of the group. Suggested sources for this material are:
    Experiences common to boys and girls of this age.
    The social studies or science unit or current events.
    Material on health or safety at a citizenship level of interest.
2. Use pictures or drawings to increase the interest value of any material.
3. Vary the form of the material to suit the reading level of the children as follows:

Material at First Grade Level

This should have the same general characteristics as good chart material.
Short sentences.
Few sentences (from one to four or five) in a single reading unit.
Many pictures (even though they be "stick" pictures).
Vocabulary increase of new words limited to one or two in a single reading unit.
Repetition of children's vocabulary by (1) use of the known (sight) words in different contexts in each succeeding reading unit, (2) use of known words on bulletin board, labelling materials, and other day-to-day experiences.
Presentation of these materials should be varied and in such form as not to offend the child's sense of dignity.*

Material at Second Grade Level

This should have paragraph construction typical of second grade books.
Content should be characterized by short sentences with few adjectives or adverbs.
The bulk of the words should fall within the first grade word list which children at this level will be expected to know.
The vocabulary difficulty should not be more than about two new words per hundred running words.
New vocabulary should be as nearly as possible within the second grade word list.
Unusual words will not be taught but will be told. These will be words

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* See The Young "Mentally Retarded Educable" Child, p. 80.

not likely to occur often enough in any other reading material to provide the necessary repetition for memory retention.

Words occurring in the grade list beyond the second grade will be taught for meaning but not for recognition. The children will not be expected to retain them. These words should be as few as possible.

Material at Third Grade Level

This material should have paragraph construction typical of third grade books. Size of print and format should be the same as found in books for "normal" children of the same age.

Sentences should be longer than for second grade material.

The bulk of the words should fall within the first and second grade levels which children at third grade level will be expected to know.

The vocabulary difficulty should be limited to about two new words per hundred running words.

New vocabulary should be as nearly as possible within the third grade word list.

Unusual words will not be taught but will be told.

Words occurring beyond the third grade list should be taught for meaning only and children will not be expected to retain them.

Evaluation: The teacher should ask herself the following questions in evaluating material intended for children who work at primary grade levels:

1. Will this material be interesting to children of this age? These children have a social maturity which would naturally rule out stories suitable for children of ages six, seven and eight.
2. Does the vocabulary of new words fall within the grade level for which the material is intended?
3. Is the vocabulary burden light enough (two new words within one hundred running words) so that the child will experience pleasure in reading it?
4. Is the material set up attractively with clear, well spaced typing?
5. Is the size of type and general format typical of books for normal children of the same age?

MEETING THE NEEDS BY SHARING THE TASK

While there is an increasing number of high interest-low difficulty books offered by publishers at a third to fifth grade reading level for older children, there are very few books at a first to easy third grade level. It is at this beginning level that there is need for an abundance of reading material. We learn to read by reading. The urgent need for adapting suitable material to suitable reading levels is however an almost insurmountable task for the teacher of a special class.

A highly professional way to tackle this job would be for a group of teachers to voluntarily join in the project to supply for use in their own classes adapted and/or original reading material. Study of the list of suggested units on the chart Growing Up in a Democracy will suggest desirable contents for this reading material. An outline description of how this problem was met by a group of teachers follows:

1. They met to discuss units which they each planned to develop in their own classes. They then selected a unit for which they would adapt or create stories or informational reading material at an easy second grade reading level for 9 and 10-year-old children.
2. Examined several second grade books for sentence structure, length of paragraph, vocabulary count, etc.
3. Examined several fourth and fifth grade books 9 and 10-year-old children were using in regular grades. Noted size of type and general format.
4. Each teacher volunteered for one of the following specific tasks:
    a. One teacher gifted with enthusiasm, imagination and some writing ability wrote or adapted stories or informational material.
    b. Another with special organizational ability studied each story as it was written and made a list of:
        (1) New words introduced and number of times each word was repeated.
        (2) Number of times each word already in the children's reading vocabulary was repeated.
    c. One worked with the writer to rewrite the material to meet the criteria for:
        (1) Number of new words per running hundred.
        (2) Repetition of the new words within the written material.
        (3) Repetition of known or recently learned words in the material.
    d. A teacher with an artistic eye sketched appropriate pictures or used stick pictures to illustrate.
    e. Another teacher typed the material, set up in good form and mimeographed copies for each teacher to use in working with her group at that particular reading level.

Over a period of two years, several books* of stories and informational materials were created for classroom use. For each title the same stories or information were developed at first, second and third grade reading levels. In some classes where the children were working at these reading levels, this made it possible for the entire class to be reading the same material or gaining the same information, each group at their own reading level. This made a valuable contribution to the development of the unit. Because the information contained in the reading material was the same for the entire class, it formed a common basis for class discussion and activity. After a tryout of the reading material, it was made available to any special class teacher whose class was working at a first, second or third grade reading level.

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* Samples of these books, produced by a group of Baltimore Opportunity Class teachers, were placed in the Honolulu Resource Center for Special Class teachers in 1946 and again in 1959 but have disappeared.

BOOK LISTS

HIGH INTEREST-LOW DIFFICULTY READING MATERIALS

Help In Your Search For Suitable Reading Materials

In selecting books from this list, the teacher must be aware that these books were written for mainland children and therefore, unless the children of the Hawaiian Islands bring to each of these books a good background of experiences through TV, movies, slides, pictures, etc., the "mentally retarded educable" child may read the words but not the meaning and will find the book neither interesting nor valuable.

Betts, Emmett A., Handbook on Corrective Reading for the American Venture Series: For Slow-Learners and Retarded Readers, 1960. Evanston, Illinois, Harper and Row.

Gilliland, C.H., Materials for Remedial Reading and Their Use. Billings Reading Clinic, Education Division, Eastern Montana College, 1966.

Newfeld, Rose, Reading Fundamentals for Teenagers, New York, John Day Company, 1964. Provides a series of corrective reading exercises emphasizing three main areas: comprehension, vocabulary, word attacks. Contents at third and fourth grade reading level. Interest level of urban teenager using words and stories pertaining to life of the adolescent and the city he lives in.

Spache, George Daniel, Good Reading for Poor Readers, Champaign, Illinois, Garrard Publishing Company, 1968 (6th edition). Dr. Spache is professor of education, head of reading laboratory and clinic, University of Florida. An extensive bibliography is preceded by a discussion on choosing the right type of book for the right child, the influence of size of type and length of line on ease of readability of a book, on short paragraphs for ease of comprehension. Each story or book listed shows author, title, reading level (RL), interest level (IL), publisher and year published. Old titles from previous editions have been dropped and new ones added. Both RL and IL represent the average opinion of teachers who have tried them in their classes. The IL represents the maximum grade level (C.A.) at which a book would be acceptable. A bibliography is listed under the following headings:

Tradebooks Useful for Poor Readers are listed by subject under forty different headings. The range is from RL second to eighth grade reading difficulty, most of them being in the second to fourth grade bracket. The IL ranges from "two up" (C.A. seven and up) through "twelve" (senior high).

Adapted and Simplified Materials. Classics adapted to second, third, fourth grade reading level for pupils whose C.A. peers are in fifth, sixth, seventh and up grades. Classics in "funnies" format are included.

Textbooks, Workbooks and Games. Many suitable for use with "educable mentally retarded" children. See especially games, basic sight word cards, etc., by Dolch.

Magazines and Newspapers for Elementary and Secondary Pupils.
Series Books.
Programmed Materials List.
Visual Perception Materials.

The Paperback Goes to School: A selected list of elementary and secondary school titles, Bureau of Independent Publishers and Distributors, New York, 122 East 42nd Street, 1967-68 (BIPAD). Each title considered for suitability by committee made up of members of NEA, American Association for School Librarians and the National Council of English Teachers. See page for list of lower and upper elementary books. Some of these would be of interest level suitable to older children. Many of these titles provide a good source of material at high interest level for older children which teachers can adapt to first, second and third grade reading level. Books listed in this catalog are obtainable locally at Hawaiian Magazine Distributors, 222 Koula Street, Honolulu.

PHONICS

A Tool for Spelling and Reading

Phonics is a very helpful tool for some children and a source of confusion to others. Children who have a hearing defect, poor auditory discrimination, or who have insufficient mental age to understand how to blend sounds cannot use phonics. A child with either poor auditory or poor visual imagery would make better reading progress using the Fernald method. See page 82 for description of this method. Children who have not had the kind of phonic readiness experiences that provide a foundation for building phonics skill are often confused and discouraged by "lessons" in phonics.

Inventory of Phonics Skills: Before attempting to teach phonics you will need to discover if the child can:

1. Identify in spoken sentences the words that have like beginning or ending sounds.
2. Give the sounds of any or all of the letters of the alphabet.

As you progress in teaching the use of phonics, you will need to make inventory checks on how independent the child is in using what he has learned. For example: Does he use the sounds of beginning consonants together with context in attacking all words beginning with the letter sounds he has learned?

Foundations for phonic instruction include many successful experiences in:

1. Repeating a short sentence correctly immediately after hearing it.
2. Identifying words within a spoken sentence that have like beginnings or endings:
   Tr. : My baby sister plays in the sand.
   Child : sister sand.
3. Grouping objects according to names that start the same.
   Tr. shows : a ball, a bean, a marble, a pencil, a doll, a bead, a banana.
   Child selects: a ball, a bean, a bead, a banana.
4. Supplying the missing word for a sentence in which a child or teacher says something about an object near at hand.
   I hear the ....ringing. This chair has four.......
5. Given the initial sound clue, supplying (say) the word needed to complete the thought (sentence).
   I can s... a song. My n... is John, etc.

Phonics for the child who is ready

Make sure the child is ready for phonics (see foundations above).
Use the same method you have found successful with "normal" children with the following adaptations:

1. Pace the steps carefully to meet the child's slower rate of learning and to provide many experiences with each new sound or combination of sounds.

2. First teach the sounds of the few consonants that are easiest to sound separately when sounding out a word (see phonics outlined below).
3. Next, teach the short sound of each vowel, using the words from his reading vocabulary that begin with consonants he has learned to sound. This is a departure from traditional phonics teaching. The need for this approach is explained in detail under Simplified Phonics. Some pitfalls that the teacher should avoid in teaching functional phonics are found under Guides for Teaching Remedial Phonics, page 105.
4. Guide the child to discover a use for each sound he learns through finding it in words he already knows. Then listening to it as he says it over and over feeling it on his lips, his tongue or teeth and using it to attack new words in new reading material.

Remedial Phonics for the Child Who is Confused

The outline which follows is an outcome of many experiences with children who were confused by ordinary phonics instruction or who were not able to make the phonics they learned in their reading period, function in independent reading. It has been used also with older children who have had no instruction in phonics or who have been taught exaggerated or inaccurate sounds for some letters. It is not recommended for use with children who show no phonic readiness. Except for first teaching the few easiest consonants and then the vowels. It is not recommended with young beginners.

In using this approach to phonics, we begin by showing the children that the 26 letters of the alphabet can be divided into 4 parts in terms of difficulty. Children always seem very interested in this over-view of the whole job. It seems somehow simpler and more attainable than when they are introduced to one letter at a time. They are always pleased to discover that there are 10 consonants that are easy to learn and only 4 which are really difficult. The short sound of the vowels is taught after they have learned the 10 easy consonants. The consonants are then blended with the vowels.

As they learn each vowel, it is discovered as a second letter in several words they already know; they say the word slowly and-more-and-more slowly; they HEAR the first and the second sound and FEEL them blend. This then provides a readiness step for learning to make the sound of the remaining consonants that can only be voiced with an accompanying vowel. This provides a careful pacing of the difficulties in learning the letter sounds.

SIMPLIFIED PHONICS

Outline in Steps of Difficulty

I. The 26 Letters--Alphabet.
An over-view of the alphabet.
   1. Letters whose sounds are strong and can be heard without an accompanying vowel.
      F L M N R S T V Z and C when it uses the sound of S.

2. Vowels: The child notices that at least one vowel is in every word. We tell him that at least one is needed in order to be able to "say" any word.
   A E I O U and Y which always has the sound of either E or I.
3. Letters whose sounds are weak and need a vowel to help "voice" (hear) them. We try to say them and to show him how weak they are.
   G H J K W and C when it uses the sound of K.
4. Letters whose sounds are very weak and cannot be "voiced" except when blended with the sound of a vowel or another consonant.
   B D P and Q. (Q is so weak it must have two vowels to give it "voice". The first vowel is always U as in quick).

The beginning sound of the first two or three letters is a powerful clue to a new word when used with the context of the sentence.

II. Letter Combinations

Letter combinations you can hear.

1. ST, SL, CR, DR, BL, PL, etc. STR, SCR, etc.
   These call for practice in blending (practice in feeling and hearing the blend).

Letter combinations that make new sounds.

1. CH, SH, GH, PH, TH and TH (there are two different sounds for TH). Notice these are all combinations with h.
2. Listen to the sound of OU in out - our. Notice that ou almost always says what you almost always say when you hurt yourself.
3. Notice how OW says ou or the name of the letter o. When you meet it in a new word try the ou sound first. Listen for it in how, now, cow. Now listen for the o in low, show, know, grow. When you need to spell a word that has the o sound at the end, you will be safe to add w to it.
4. Listen for the sound of AU in caught, taught.
5. Listen for the sound of AW in law, awful, paw.

Letter combinations with R, L or W that influence the sound of the vowel.

1. Influence of R: er, ir, ar, ur. Listen to: her, first, thirty, hurt, curtain, far, start.
2. Influence of W on the sound of a when w comes before a. Listen to the sound of a in: wash, want, wander.
3. Influence of L on the sound of a when l comes after a. Listen to the sound of a in: walk, talk, tall, fall.

Double vowels: When two vowels come together in a word the first usually "says its own name" and the second one is always silent.

1. Listen to: eat, weak, wait. When you meet a word like this, first try saying the first vowel's name. Then, if the word doesn't "sound sensible" try the short sound of the first vowel: bread, head, etc.
2. Notice that EI together make a new sound, like the name of the letter a. Listen to: eight, weight, freight.
3. Notice that IE together say e. Listen to: thief, belief.
4. Notice that OO together make a new sound. They never say the name of the letter o. Listen to: moon, soon, balloon, broom.

III. Words

Short words

1. Two letters (a two letter word or a syllable). Second letter a vowel--the vowel "says its own name", (except o).
   be me ba by ta ble ti ger
2. E on the end of a word. The E has no sound (silent), and usually the other vowel "says its own name".
   make made.

Long words

1. Divide into syllables BETWEEN consonants. If there is only one consonant it belongs to the vowel that comes after it.
   pattern belong this makes the vowel in the first syllable "say its own name" if the first syllable has only 2 letters (see above).

IV. Word Forms That Help With Meaning (structural analysis):

Changes in word form.

1. Addition to endings.
   s ed ing est er ly ness tion ment ish
2. Additions to beginnings - un.
3. Dropping a letter: drop e if on end of word (make making).
4. Adding a letter: double if the end letter is p, m, n, b.
   Listen to and look at: running, dropping, bobbing, swimming.
5. Sometimes changing form to show when something happened (tense).
   Look at and listen to: make - made, eat - ate, know - knew, go - gone.

This phonic outline may be criticized for being oversimplified but it gives the child a fair working knowledge of the use of phonics as an attacking tool for new words. When used in connection with the material he is currently reading, it forces him to realize that meaning (comprehension) is necessary for use with phonics.

Suggested Devices for Phonetic Practice While Keeping Meaning High

After learning the sound of one of the consonants the children may be given a short story (a few paragraphs) to read in which the sound of one letter occurs repeatedly.

The story should be read for meaning (information or pleasure). The children will be told any needed words which do not contain the sound they have learned. They will be encouraged to use the sound they have learned independently. If they are unable to do this, they will be given encouraging guidance.

After learning the sound of a letter or combination of letters, the child is given a page of reading material containing words in which this sound occurs frequently. This material, however, is covered with a mask showing only the words containing this sound. Children sound out these words and if necessary discuss the meanings of the words.

The mask is then removed and the children read the story for pleasure or information. The use of the mask never fails to heighten speculative interest in finding out what the story is about.

After having learned the sounds or combination of sounds, the children may be given a series of short incomplete sentences to be completed by one of several words using sounds that are known or are being learned.

Guides for Teaching Remedial Phonics

1. Be sure you are using the "true" sound of the letter (b is not "buh", d is not "duh"). You can't voice b without a vowel after or before it. The "normal" or gifted child *may* get around this difficulty but it will only serve to confuse or discourage the retarded child. If a consonant cannot be sounded clearly by itself, do not teach its sound until after the child knows the sounds of the vowels and can then blend the consonant sound into the sound of the letter which follows it. A hand mirror is a great help in showing a child the placement of teeth, tongue and lips while making a sound.
2. Let *the need to learn* each new letter sound *arise within a reading experience.*
3. Teach for permanence.
   Phonograms or end rhymes will retard the child's use of phonics beyond the first few hundred one-syllable words. To see how confusing phonograms can be, listen to the following common phonograms in one syllable words and then note how unusable they often are in words of more than one syllable:
   ad bad lady adopt -- ig dig tiger
   et let return -- ot hot hotel notice notify
   The device of looking for "little words in big words" creates problems if used before the child learns to divide a word into syllables. Examine the following to make this point clear:
   Looking at *washer,* we see the words: as ash was her; whereas we only hear *wash* er.
4. Rules will not help the retarded child because one of his chief limitations is his lack of ability to handle generalizations.
   Therefore, instead of rules, set up guides to knowing which sound is "best to *try*" in attacking a new word.
5. Teach to point of application. Do not teach a new sound until the child is able to use sounds previously learned in attacking new words. If he can't learn to use the sounds he learns, he can't learn to use phonics. Don't waste his time.

SIX STEPS IN MAKING THE TRANSFER FROM THE CONCRETE TO THE ABSTRACT SYMBOL

The Class is at the beach
Jim finds five beautiful shells. Later he finds three more. He discovers that he now has eight.

1. An incidental experience with number.

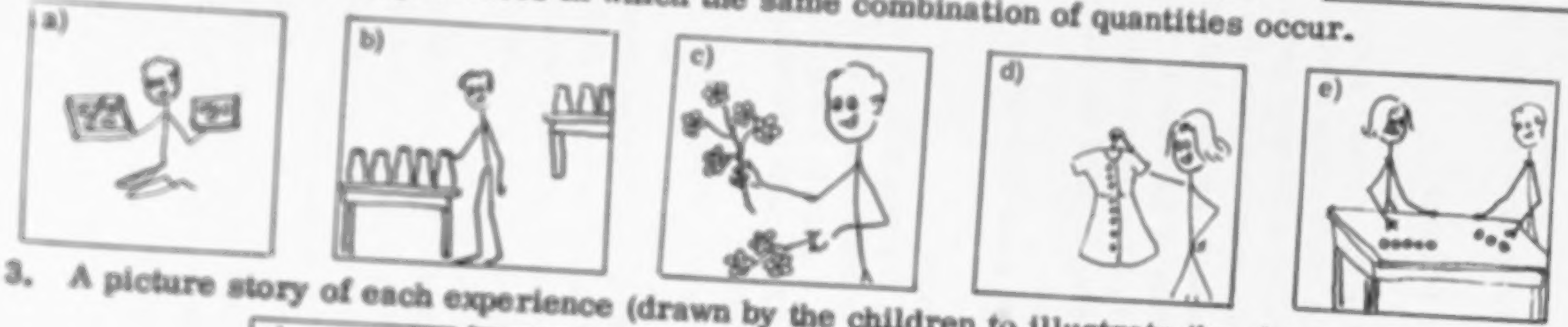
b) After Recess
There are five milk bottles on this table and three on that. I will take them to the kitchen.

c) Jim Picks Flowers for the Room
This stem has five flowers on it; this stem has three. I will put them in a bowl.

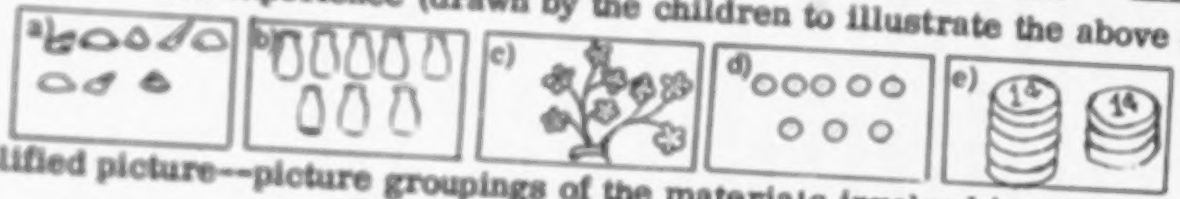
d) The Child Observes
There are five buttons on my skirt and three on my blouse.

e) The Class is Going to Buy a Fish Bowl
I will put my five pennies with your three toward buying the fish bowl.

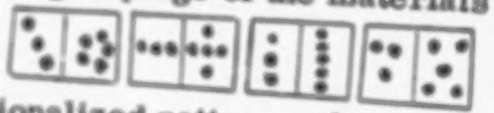
2. Several experiences in which the same combination of quantities occur.



3. A picture story of each experience (drawn by the children to illustrate the above experiences).



4. Simplified picture--picture groupings of the materials involved in each experience.



5. The pattern--conventionalized patterns of the quantities in varied groupings.

$$\begin{array}{r} 5 \\ +3 \\ \hline 8 \end{array}$$

6. The symbol--numerals involved in the combinations.

ARITHMETIC EXPERIENCES PROVIDE DIRECT-LEARNING

So much has been written about the importance of real life experience in the teaching of arithmetic to "normal" children that it is unnecessary to emphasize its importance in teaching arithmetic to the retarded. These children in general lack the ability to comprehend the abstract. They are dependent on real and vivid experiences with concrete materials for the establishment of number concepts and as a basis for making generalizations. The following factors make the activity program a valuable means of interpreting the meaning of number symbols:

> Interest which is an essential element of all learning is high because an activity program is child centered.
>
> Concrete materials are abundant and familiar because they are the tools with which the experiences are carried out. Mentally retarded children are very dependent on manipulation of concrete materials for the understanding of any new problem.
>
> Abundant opportunities for vitalized practice will arise because the same processes will be repeated in different phases of the activity.
>
> The quantitative aspects of daily life gradually unfold for the child when arithmetic is correlated with other subjects and not exclusively pigeonholed in a separate arithmetic period.

There should be no attempt to crowd into an activity program a multitude of new arithmetic concepts. It must always be kept in mind that we make haste by going slowly with these children. Our chief expectation of arithmetic progress in any one unit is that (1) given the keen interest of the child, together with the concrete materials of the real life experience as tools, the child may be led to find new uses for as many as possible of his established number concepts in solving new problems; and (2) will gain a few new number concepts which in turn, with teacher guidance, he will use for in a future activity program. Arithmetic situations that occur in any activity program may be classified as follows:

> Familiar situations which the children are ready to handle independently. These will involve informal functional use of a mastered skill at any time, in-or-out of an arithmetic period.
>
> New experiences that call for use of a known skill in a different situation thus deepening the specific number concept.
>
> New experiences that call for learning a new skill in order to solve a problem.

New problems which call for use of a new skill.

1. A few of these will be utilized by the teacher as a means of presenting a new skill or new step in a process as the necessity arises to solve a specific problem which the children have been led to discover. These are skills which the children are ready to learn.
2. Others will be worked out by the children and teacher without attempt to learn the process involved. These are skills which the children are not yet ready to learn. These are background experiences for future work in these skills and as such are very valuable.

As indicated above, arithmetic experiences should not be confined to the arithmetic period alone. The children's readiness (M.A. and foundations) for learning the skill will be the deciding factor. The work of the entire day can be correlated through the activity program. Units are most effective for these children when they are short and cover a little ground carefully.

ARITHMETIC GOALS

For the Retarded Child: A Future Citizen in a Democracy

Facility with locating and reading numbers as they occur in community life:
To acquaint the child with the number aspects of community services through experiences with reading numbers serially; as on license tags, telephone directory, street numbers, city street directory, etc.
End-product: Ability to use services of above.

Independence in handling ordinary cash transactions:
To provide through playing at life situations, constant practice in making change with real money to the extent that the child knows what change to expect in making a purchase.
End-product: Ability to protect self from dealer's possible error.

Ability to recognize the arithmetical element in a situation.
To choose and use accurately the appropriate tool-skill to solve the problem.
To continuously direct the child's attention to common number aspects of daily living until he finally recognizes them independently.
End-product: Ability to use number skills as needed.

Recognition of and ability to interpret commercial sales terms:
An acquaintance with, and working knowledge of, commercial sales terms as they touch his own and his family's life in purchasing: 1/3 off, 20% reduction, 3 for 17¢, small carrying charge, no down payment, 10% discount, etc.
End-product: Recognition of opportunity to save by buying in quantity, or buying seasonal goods. Freedom from temptation by loan sharks. Sales resistance when purchases would be a financial burden.

Acquisition of a habit of thrift:
To continuously provide worthwhile, enjoyable experiences in ''saving-up'' for some anticipated enjoyable occasion (always in the NEAR future) until there begins to develop a responsive attitude toward thrift.
End-product: Willingness to save.

Ability to budget both time and money:
Money: To foster an increasing awareness of the quantitative aspects of daily life. Begin with the child's own experiences with money earned or given him. As he grows older deal with the quantitative experiences of his immediate family environment such as allotment of proportional amounts of income to items on the family budget.
Time: Wise allotment of time to work, recreation and sleep.
End-product: A sense of responsibility for maintaining financial and physical well-being.

Ability to protect rights as a wage earner:
Beginning with experience in telling time, to use classroom clock, to learn to figure the amount of time spent on various activities in class; and finally

to be able to figure work hours and wages expected on basis of hourly rate of pay.
End-product: Security of knowing what the pay envelope should contain.

Conservation of resources--money and materials:
Money: Economy through buying exact quantity needed.
Materials: To know amount needed for repair or refinishing furniture, covering floors, or making clothing. Many experiences with measuring as used in ordinary family situations: buying by yard or fraction of, using measures in preparing food, painting room, or painting furniture, buying floor covering material by the square yard or square foot.
End-product: Personal satisfaction of success in keeping up appearances of self and home on a small income.

Facility in use of public services and public utilities:
To provide through playing at life situations, knowledge of: when to use stamps of various denominations for mailing letters, parcel post rates, telephone and telegraph rates, bus and taxi rates, reading and interpreting gas, electric, water meters.
End-product: Satisfaction of using above services to best advantage.

GUIDING PRINCIPLES IN TEACHING ARITHMETIC

Check Pupil Readiness for Each New Concept or Skill You Plan to Teach

1. Mental Age - Is he old enough for what you plan to teach?
   The appropriateness of any arithmetic material listed under grade level headings in current curriculum guides may be determined for any child by comparing his mental age with the grade level of the subject matter. For example, the material outlined for a 9-year-old fourth grade child is that which a child having a mental age of 9 years might be expected to be ready to learn (always, of course, providing that he has the necessary foundations for it). In general, the teacher should not attempt to teach this subject matter to a child of less than 9 years mental age unless an informal inventory test clearly shows him to be ready.

2. Informal Inventory Tests - What is his actual working level?
   The teacher will need specific information about the child's present actual working level. Inventory tests plus teacher observation of the child at work will supply this type of information. It is important that the teacher note how he works, the type of errors he makes, obvious lack of concept, confused ideas, or inefficient pupil method of attacking a problem, before making plans for either remedial work or new instruction. The old special class adage "Begin where the child is" was never more important than in the teaching of arithmetic. Time is wasted and troubles accumulate if the teacher does not discover the child's working level (no matter how low it may be) and proceed to build from there.

3. Foundations - Is he ready to understand the new lesson?
   The child who enters first grade before he has reached a mental age of 6, when arithmetic readiness is probable, is almost without exception exposed to arithmetic before he is ready for it.
   This child has missed the significance of fundamental concepts contained in the vocabulary of arithmetic. He has memorized computation skills without understanding them. He needs much foundation work in building a meaningful arithmetic vocabulary and in establishing number concepts so that he will be able to use the arithmetic facts he has memorized.
   Having found "where the child is" in arithmetic and having administered any necessary remedial teaching, the teacher should then check to discover if the child has the necessary foundation for each new item of arithmetic learning before attempting to teach it. This careful pacing of the work will repay the teacher many times over in the steady (though slow) progress of the child. It will increase the child's cooperation when he recognizes the fact that he is making progress.

Pace the Work to the Child's Own Rate of Learning

Guard against the common error of going too fast or too slow.
The child's probable rate of growth is indicated by his I.Q. For example:

> John has an I.Q. of 75. We may expect him to be able to cover three-fourths of a year's work in 12 months. Of course, there may be other factors which may limit his progress in acquiring academic skills. When these enter the picture, his rate of growth will be slower or may stop.

The teacher needs to take into consideration all the above factors as well as the child's actual performance in the classroom work in her daily lesson planning.

Establish a Functional Attitude Toward Arithmetic

Make sure the children apply what they know in daily meaningful activities and situations.

Present every number concept in some situation as it is used in life.

Be alert to and use the number possibilities present in various social studies, science, health, and civics units and in everyday child experiences.

Recognize that children are usually most interested in immediate problems. The immediate problem may call for a skill which will not be taught until later on. Use the child's interests in this immediate problem as a means of developing the meaning and thereby laying a foundation for this skill.

Guide the Transfer from Concrete to Abstract

So much emphasis has been placed on the use of concrete materials in teaching the retarded child that it is possible for the teacher to forget that after meaning has been established, there must be a transition from concrete to abstract. This is a necessary step. It will enable the child to use the addition, subtraction, multiplication combinations or processes independently whenever a situation involving their use arises.

The illustration on page 106 traces stages in the evolution of a number concept from concrete (specific) to abstract (generalization).

Remember that regardless of the variety or amount of interesting, happy, meaningful experiences you may provide for these children, if you do not help them make generalizations and see relationships, their days will be filled with a happy mass of blurred separate incidental happenings and learning will not result.

Secure Retention by Seizing Every Opportunity for Use of Known Skills

Be alert to every arithmetical situation and provide an opportunity for children who know the skill it involves, to make functional use of this skill. For example:

> If the children in the lowest group cannot count above 10, have them count out the papers for each group everyday rather than yielding to

the temptation of having a more able child take charge of the distribution to the whole class.

Encourage the child to use a new generalization (1) incidentally as often as opportunity arises for applying it in classroom activities outside the regular arithmetic period; and (2) in solving problems assigned to the group for independent work during the arithmetic period.

Base Standards of Achievement on the Child's Probable Educational Limit

The child who may be 8 years old mentally when he leaves school needs a very different kind of arithmetic than the child who may have a mental age of 12 at the age of 16. Both of these children as adults will meet the same arithmetic situations in daily life. Each should be ready to meet these situations on his own level whether it be by means of manipulation of objects or money, or by means of computation. (See pp. 127, 130, 131.)

COMPUTATIONAL SKILLS GROW OUT OF PROBLEM SOLVING

Arithmetic is justified in the curriculum for these children only insofar as it prepares them to meet immediate and future arithmetic needs; all real life needs are in the form of problem situations. The mastery of skills is required only because it contributes toward this major goal. It is not in itself an ultimate objective of arithmetic teaching. With this in mind the teacher will recognize that all arithmetic material should be of the kind that continually stresses a MEANINGFUL presentation in problem solving.

The attainment of our Arithmetic goals for these children depends upon the development of a functional attitude toward arithmetic on the part of the children. It necessitates a plan for gradually accumulating natural and meaningful experiences with each given fact or skill. It should permeate all instruction from the arithmetic readiness program on through all levels. Every fact should be presented in a natural problem situation until the child realizes that all computation has arisen from concrete situations. This realization is necessary unless the child is to consider all computation as "a bag of tricks" where "you do this, and then do that" to get the right answer.

Problems which arise in the classroom will, of course, be real. The child is always interested in problems in which he can readily imagine himself, his parents, his associates, or his teacher playing a part. All problems should be enacted before the group by the children to emphasize the reality of them. In this way children will be encouraged to form the habit of "living" their problems. If these children form the habit of projecting themselves into every problem they encounter, a long step will have been taken toward attaining the major goals outlined on pages

If encouraged to do so, children enjoy (1) "making up" problems, (2) bringing in problems which they have encountered out of school, (3) comparing the teacher's "made up" problems with similar ones they have encountered or their parents or associates have encountered outside of school. To insure maximum growth in arithmetic understanding:

All new work must be presented through the medium of problems.
Practice must provide further experience with the new learning in as many as possible different problem situations.
Except for drill (generalization), these children must never be asked to work abstract examples.
The functional use of acquired number facts, processes or informational items (measures) must be maintained and retention assured, through continual use in the solution of problems that arise outside of the arithmetic period. Real problems, arising out of an activity that is full of meaning, help to solve themselves.

Oral Problems: The first problems should be oral and should be worked out by the children through dramatization or through manipulation of objects. For example:

> The children are saving to buy a fish. "Here are the pennies in our box (2 pennies in the box). John brought one more penny today. Let's see how many pennies we have now."

Later the children should be taught to solve problems in response to oral directions.

> John needs 7 blocks. This is how many he has now. Draw enough more to make 7 blocks.

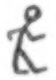
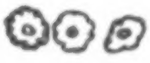
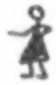
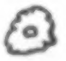
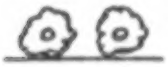
Oral problems should continue throughout all grade levels. During the arithmetic readiness stage and on the primary level their purpose will be to establish problem solving as the basis for all arithmetic learning. At all other levels the purpose will be to foster use of any skills already mastered in the solution of the type of problem which the average child or adult is called upon to solve without recourse to pencil and paper.

Written Problems: The step from oral to written problems is one of extreme difficulty because the child now finds himself faced with two tasks. First, he must translate the written language symbols into words so as to "get at" what the problem is about. Next, he has to project himself into a imagined situation to deal with more symbols (numerals) which stand for certain amounts of unseen objects (money or materials).

Realization of this extreme difficulty will make it plain to the teacher that she must make a careful transition from oral to written problems to save confusion, dismay, rebellion, or futile searching for clue words on the part of the child who is forced to attempt written problems. The steps indicated in the following example are intended to guide the teacher in making this transition:

1. Translate into picture problems the simple oral problems which the child has been solving by means of manipulation of objects.
   0 0 0 and 0 0
   Make sure that the child himself is able to do this with any oral problem before proceeding with the next step.

2. Make up simple written problems using stick pictures in place of numerals and in place of any picturable words. Keep all other words within his EASY reading vocabulary. For example:
   Teacher's explanation: "These number stories are about Jack and his little sister, Betty, and some cookies."

   Problem:  had  . He gave   . Now he has  left. (Child draws the cookies on the blank line to complete the sentence.)

3. State written problems in short sentences without pictures. Use a minimum of words and only those at the child's level-of-ease in reading.

Foundations for Written Problem Solving

A working use of the computational skills involved.
An understanding of the "meaning" of the process involved. If he does not understand the meanings of the various processes, he will not know which one to choose.
A reading vocabulary which includes common arithmetical terms such as pay, buy, cost, etc.; and which is at a level-of-ease for the group for which the problems are planned.

Teaching the Child to Read a Written Problem

The class should be invited to silently read a written problem from the blackboard. One child should then be asked to stand facing the group and tell the story of the problem in his own words. For example, the problem as written on the board might read:

> "Mary has 6¢. She wants 10¢ to go to the park. How much more will she need?"

The child's oral interpretation of this problem might be: "Mary is saving for our trip to the park. She has only six cents and she wants to know how much more she must save." The group, not the teacher, should decide if this explanation is satisfactory. If it is not, another child should be invited to give his version. The problem then should be read orally from the board by another child and solved as a result of group discussion by all members of the group. The answers, the method used, etc., should be compared and evaluated by the group.

CAUTION: The use of clues or formulas as an aid in problem solving instead of teaching the child to interpret the problem in his own words, defeats its purpose because clues are often misleading and the use of the formula is often more difficult than the solving of the problem. The child must be able to give an oral interpretation of the problem before he decides how to solve it.

AN ARITHMETIC READINESS PROGRAM

For the Child Below Six Year Mental Age
or
The Child Who Has Difficulty With Number Ideas

A child is usually not ready for arithmetic before he reaches a 6 year mental age. Contrary to the idea that these children must mark time or do "busy work" for the year or more which must elapse before it is sensible to attempt number work, is the realization that this will be a very valuable time in which sure and firm foundations can be built through the establishment of clear number concepts and a wide, meaningful arithmetic vocabulary. These foundations can be built through many varied and purposeful activities in each of which the child makes use of or discovers a number situation.

The acquisition of these number concepts and vocabulary must not be left to incidental experiences but should be planned for by the teacher who will carefully plan a series of lessons each of which will have as its aim the teaching of one specific concept. In addition to this specific planning, as many practice lessons as necessary will be provided and every opportunity will be seized to apply the new information or skill in incidental or informal situations which arise outside of the arithmetic period in the classroom or on the playground.

The teacher must use a great deal of imagination and insight in carrying out an arithmetic readiness program with immature children. The suggestions contained in this section are merely intended as a general guide. Many other ideas will occur to the resourceful teacher as she works closely with these children in the classroom.

Discover What Number Ideas the Child Already Has

In order to "Begin where the child is", we will have to give the entering child an inventory test. Though it is very unlikely that he will be entirely devoid of any number ideas or number words, we must find out what he knows and what he lacks.

An arithmetic readiness inventory test should be given individually. It should be brief, direct and simple, and should cover only essentials about which the teacher needs immediate and accurate information. This inventory test need not be given in the arithmetic period but whenever a natural situation arises in which a specific number ability or understanding can be checked. It should not be given in one "sitting" to any one child.

The teacher should have a form ready on which to record the child's responses because she will want to use this record as a guide to lesson planning.

Use Concrete Objects in the Inventory Test

Since most of the child's meaningful number experience has been limited to concrete objects, the inventory test should make use of objects the child can see and handle. Tests requiring writing or utilizing pictures rather than concrete objects are not suitable for these children. The writing situation is not a natural or informal one, and the use of pictures assumes a type of experience and a step toward abstract thinking for which most children having a mental age below 6 are not ready. Informal individual tests which make use of objects--not pictures--common to the child's environment are needed to enable us to "begin where the child is."

Help the Child Use What He Knows

The teacher's first concern should be to organize the arithmetic ideas which the child already possesses and provide for their frequent use, so that he is aware of what he knows and gains in power to use it in functional situations. For example, can he count to 6? Then if there are six chairs to a table, have him count out six pieces of paper for each table every morning before school. Can he recognize a group of 3? Then ask him to bring you the books that have three stars on the back, etc.

The teacher's next concern is to provide or seize opportunities for natural situations involving concrete materials in which a new concept may be presented as a problem to be solved by manipulation of materials.

Since all the child's out-of-school arithmetic learning has grown out of normal everyday play or family experience in which number is incidental, it seems wise to continue such experiences as a basis for further growth toward arithmetic readiness with additional classroom experiences.

3

ARITHMETIC READINESS EXPERIENCES

Suggested Experiences for Building Foundations for Understanding Numbers

The development of number ideas and the vocabulary of these number ideas should take their place among the natural day-to-day experiences of the child at work and at play in school. If the teacher is careful to bring out accurate clear-cut meanings in all vocabulary usage, she will go a long way toward establishing a firm foundation upon which later arithmetic learnings may be built. Every opportunity for the natural use of quantitative terms should be utilized in daily experiences. We must be alert to the fact that the vocabulary carries or contains the concept. The following suggestions for developing the meaning of number are intended only as a guide to the teacher who will no doubt find many other number situations within the school or neighborhood. Most of the vocabulary and number ideas that follow can be developed before the child reaches a mental age of six. However, regardless of his mental age he must acquire them before he is ready to begin "arithmetic".

Group Concepts

Four Steps before Counting

There are four fundamental ideas or steps in learning the meaning of number that the child must acquire before he is ready to begin to learn to count. These four steps together with the fifth, the counting idea, provide the foundation upon which learning to read and write numbers and to use the facts of the four fundamental processes is built. These steps are described in sequence below and suggested activities which call for the use of the number idea are indicated for each step. Use small objects in developing these concepts so that the children may learn to recognize at a glance, groups of 2, 3, 4 and possibly 5.

Step One:

The child's first idea of number is one of relationships. It is the appreciation of the fact that groups of like objects may differ as to amount in each group. For example, in the following groups:

00 0000 000 00000 One group is the least; another the most.
Some groups have fewer than others, some have more than others.
The 00 groups have less than the 0000 or the 00000 groups.
The 000 group is more than the 00 group.

Activities that develop this concept:

Use groups of five or less objects and observe different groupings without learning the number names for them.
Observation of flowering plants. Which plant has more flowers on it? Which has the least?
Games: Using small objects. Who has the most? Who has the least?

Vocabulary of this concept: more than, less than, few, fewer, the most, the least.

Step Two:

The child's next idea of number is appreciation of the common quality of groups that have the same amount as other groups. For example:

/// *** 000 XXX The "threeness" of these groups is recognized as a quality apart from the objects themselves.
It is recognition of this common quality of some groups that makes it possible to select those having a like amount from the following without regard to number names:

000 0 000 000 0000 000 00000 0 000

Activities that develop this concept:

This box has as many in it as that one. Find all the boxes that have as many as (the same as) this. (See Direct-Learning Materials, pp. 157-160.)
Jeanne and Mary have the same as I have (including an equal number for each).
Games as described in step one.

Vocabulary of this concept: as many as, the same as.

Step Three:

Now the child learns to associate a number name with each of the groups he has previously been using in steps 1 and 2 without regard to number names. For example:

**two stars *one star ****four stars ***three stars

He also discovers that there is an order or sequence for numbers and that when arranged in order each one is one more than the one before it. For example:

*one star, **two stars, ***three stars, ****four stars, *****five stars
one two three four five

Activities that develop this concept:

1. Identifying groups by number names: "How many pennies have we now?" "How many shells are here?" There will be many other times when identifying a group by number name is part of a natural class activity.
2. Arranging groups in sequence: "Bring me the box with one in it." "Now bring the box with one more in it" (child brings it and recognizes it as two). "Now bring a box that has one more than this box has" (child brings it and recognizes that there are three in it). As each box is brought it is placed beside the last one and when the child has brought all five boxes, he discovers that the numbers go--one, two, three, four five. He will enjoy the rhythm of saying 1, 2, 3, 4, 5. The teacher will originate many games of telling "how many" and of arranging groups in numerical order.

Vocabulary of this concept: more, after, before, one, two, three, four, five.

Step Four:

Using the rhythm of saying number names learned in step 3, the child will enjoy learning to say six, seven, eight, nine, ten in saying rhymes and in playing games such as: One little, two little, three little Indians, etc. Now the child is ready to be led to observe that six is one more than five and so recognize the name "six" as indicating the amount in a group--just so, he will learn that seven is one more than six, etc. He can learn only one of these numbers at a time and must have much practice with the use of each new number-name with its group before going on to learn the number value of another group.

At this time you will begin to see marked individual differences in how each child recognizes a group above the amount of four objects. Some will see six as 000 000, others as 0000 00, and others as 00000 0.

After the child has learned to identify groups of objects by number names (in speaking, not reading or writing) he will be ready for practice through such games as "what comes before" or "what comes after" using the numbers up to ten or in arranging groups of objects in numerical order.

Activities that develop this concept:

1. Building towers with blocks: five in the first tower, six in the one next to it and so on until ten. As the child does this it will become clear to him that each group is one more than the last and he will identify a number name with each successive group.
2. Beginning with any group that is recognized by the child as having "5" in it, increase the group by one more object, each time saying "and one more is" as you name each successive number.
3. Playing the "which comes before" and the "which comes after" games.
4. Numbers in sequence: what number is one more than six, than 7, than 8, than 9?
5. Numbers out of sequence: what number is one more than 7, than 5, etc.?

Vocabulary of this concept: one more than, another one, another; six, seven, eight, nine, ten.

Counting

Step Five:

A child is not ready to count until he has acquired the number ideas contained in the four steps described above. Note then, that counting is the fifth step, not the first step in beginning arithmetic! By counting, we mean the ability to find how many objects there are in a group by pointing out, touching or pulling out objects one at a time from the group. We say 1, 2, 3, etc. in sequence as we pull out, touch, or point to each one until we have as many as we want, or until we have "counted" the entire group.

No attempt should be made at this time to teach more than one number beyond the child's present ability to count. Remember that the ability to say the number in a series 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 does not mean that the child will automatically be able to bring you (select) four, five, seven or nine objects from a larger group. This is the skill that you are now setting out to teach him through many planned and varied experiences. Number situations within the work and play (games) of the child's school day will provide many such experiences, if the teacher is alert to them. Limit these experiences to counting to ten at this time.

Activities to develop skill in rational counting:

1. Number identification: "How many crayons are in your box?" The number of milk bottles, etc.
2. Number selection: "Bring three chairs." "We need four nails." etc.

Combining Two Small Groups

Making a New Group by Putting Two Small Groups Together

Foundations: Recognition at sight (without counting) groups of one to four and possibly five objects. (See Group Concepts page 119.) If the child's earliest "adding" experiences are a matter of combining two small known groups to make one larger known group, he will understand the adding process as a "putting together". For example, 00 0 000 can be readily recognized as successively two, one, three at a glance without counting. If the teacher shows the child two pennies in one hand and one penny in the other, he will recognize and name each group. If she then drops them together on the table, he will see at a glance without counting that this is a "three" group. Any combination up to four and possibly five can be "seen" when two smaller groups are combined into one. Experiences of this kind occurring over and over during the years before the child is ready to learn to "add" will enrich his group concepts and contribute a valuable foundation for forming the correct addition concept which is a "putting together" not a "counting on". The child who has this concept of the addition process, on seeing two groups of objects containing such amounts as: 1 and 1, 3 and 1, 2 and 2, 4 and 1, 1 and 2, 1 and 3 will be able to combine each of these two groups into single groups and see them as single groups of two, four, four, five, three or four successively. We do not ask the child to read or write the numbers at this time. It is enough now that he should be able to recognize and say the names of the groups as he handles them.

Activities to foster this concept: The child puts two shells in a box then discovers another one to put in also. He saw and thought "two". He saw and thought "one". He looked into the box and saw and thought "three".

Vocabulary for combining groups: all, both, and.

These words are very necessary for establishing the addition concept. They should become a part of the child's meaningful speaking vocabulary long before "addition" is taught.

Separating a Small Group

By Taking a Part of it Away

Foundations: Recognizing (without counting) small groups of one to four or possibly five objects. (See Group Concepts, page 119). The simplest subtraction idea centers on consuming, using up, giving away and the like. The child's life is full of such experiences but his observation must be directed to them or they will slip by unnoticed by him. Whenever the group involved is small enough for him to deal with, he should be guided to make his own discovery of the amount "left". For example, he has 3 pieces of candy in his hand. He puts one in his mouth and there are 2 left. He can recognize without counting a group of 3. When he takes 1 away from the group to eat, he sees without counting that he has 2 left.

Activities to foster this concept: Observing the amount in groups of things being used: how many are used, and how many are left.

Vocabulary: gave away, take away, left, (referring to remainder--I have two candies left.)

These words should have become part of the child's speaking vocabulary long before he is old enough to learn to subtract.

INFORMATIONAL ARITHMETIC

Arithmetic Readiness and Vocabulary Experiences

Time

Calender: today, yesterday, tomorrow, date; in relation to activities in the classroom, to plans, to records, and the like.

Clock: To appreciate the need of the clock as a helper. Tells us when to begin, or stop activities, to get to school on time, to turn on a T.V. program, and the like. "I was late because the clock stopped." "We have lunch at 12 o'clock."

To appreciate that the hands of the clock tell us something. For example, (1) the teacher fixes the hands of the large cardboard clock at 2:15 and then places the real clock near by. She tells the children that when the real clock hands move around to this position (pointing to the hands of the cardboard clock) it will be time to clean up. Let the child who first discovers that the hands are in the same position on both clocks choose his favorite helper job; (2) the children fix the cardboard clock hands like those of the real clock to indicate time for recess, for lunch and so forth; (3) the children fix the hands of the cardboard clock to match those of the real clock when they leave for an excursion and observe the difference in position of the real clock hands when they return. (See page 162.)

This type of experience with the clock can be carried out for any activity which seems important to the children. In no case is telling the actual time necessary. The exercises are simply intended to establish the idea of the clock as a useful tool at this time.

Ages: old - grandmother - grandfather. Also identify with signs of wearing out (old car, shirts, etc.).
older - "Mine is older than yours." "I am older than my brother."
oldest - "My sister is the oldest child in our family." "This is my oldest dress."

Other vocabulary related to time:
early - late "I was early for school." "I stayed up late."
after "My turn comes after yours." "I play after school."
slow "We were slow cleaning up today" (as taking a long time).
fast "We worked fast today" (as being finished quickly).

Money

cent - penny: Experiences with actual coins. An idea of the value of saving several pennies for a purchase (an ice-cream cone) of things that cost more than a penny. Beginning of thrift.

nickel - dime:	Examining and comparing as to size, color, design, etc. Some idea of what each will commonly buy (nickel for candy bar, dime for ice-cream cone).

Temperature

cold, cool, warm, hot:	Used in describing kind of day, feel of room, of fire, the breeze, ice, etc.
cold, warm, hot:	Used in comparison of water, milk, or other foods and liquids as being hot, cold, or warm enough; as being too hot, too cold, etc.

Linear Measure

height:	high - low; used in description of the position of objects.
length:	short - long; shortest - longest; comparing boards, string, lines of children, etc.
width:	thick - thin; comparison of books, slices of bread, walls, etc.
wide - narrow:	boards, table, doorways, etc.

Weight

light - heavy:	Comparison and identification by lifting.
lighter - heavier:	Comparing weights of various common articles or of children. Use see-saw or balance board and observe scale. Direct the children's observation to the fact that size does not indicate weight.

Sizes

big - little:	Direct observation to differences in sizes of sweaters, shoes, raincoats, etc.
too big - too little:	Look at or put on and reject or accept articles that must be big enough: specified size for fitting into something or putting around something, etc.

Packaging Terms

dozen:	eggs, dough-nuts and other common articles. Recognition of typical boxes for packing dozens with no attempt at this time to identify the word dozen with the number 12.

Forms

round: identify by feeling, by rolling, by seeing.

ring: identify as "around" something, "a ring around your finger", "make a ring around."

The Fraction Concept

whole: whole piece of paper, whole apple, whole piece of bread, etc. the whole class, the whole group, etc.

part of: "Give Sam part of your clay." "You may have part of my apple."

half: "The earliest experiences with use of the idea "half" should be accompanied by verification, matching, weighing, etc. to observe the sameness of size, weight or amount of each part (no one can cut an apple in half). End to end, or edge to edge folding gives the easiest accurate experience. String, paper, goods, etc. are suitable and are also the materials that we most often need to cut in half. The children should gain the idea that each part is exactly the same, from the teacher's insistence upon carefully comparing the two pieces before she accepts them as "halves". The teacher should be alert to discover objects in the community that are marked for separating in half.

Outcomes expected of the arithmetic readiness period.

While the suggestions in this arithmetic section are intended for children whose mental age is at or below six, they are also appropriate and necessary for any child who does not have the number concepts or vocabulary outlined here. Children who have been guided through the kind of arithmetic readiness experiences suggested above will have a good foundation upon which to build further number ideas.

Most of the activities suggested above have been the kind that would chiefly interest the young child. The same vocabulary and concepts can be developed, however, through activities that are both interesting to the older child and in keeping with his sense of dignity. The teacher has a great responsibility toward the low I.Q. child (50-60 I.Q.) to make sure that he has a good readiness foundation upon which the intermediate and high school teachers can build the simple arithmetic skills he will find necessary for self-supporting, self-respecting citizenship.

FUNCTIONAL ARITHMETIC FOR THE BEGINNER

The Child of Six to Eight Years Mental Age
or
The Child Who is Confused by Abstract Numbers

The objective experiences and resultant understandings outlined below will build a foundation for the use of numbers in the addition, subtraction, multiplication and division processes. It will give the child a working knowledge of the number system. It will also provide a foundation for later work with the four fundamental processes, for the child who is capable of learning these. It will provide the low I.Q. person with a practical means of figuring out simple arithmetic situations now and in adult life.

Group Concepts

A summarization of the four steps before counting: The child learns that groups (1) differ, (2) may be alike in quantity, (3) can be arranged in order of quantity and have number names (verbal symbols for each group), (4) units within the group have number names in sequence (serial counting) and that each group is one more than the preceding group. The fifth step is counting. The child learns that the last unit named in counting a group is the amount of objects he has counted. These group concepts should be developed on the arithmetic readiness level. (See page 119.)

Recognition of groups up to four or possibly five should be achieved before attempting the outline which follows below.

Counting

These children should be initiated into counting in the four following steps: (1) one to five, (2) five to ten, (3) the "mileposts", ten - twenty - thirty to one hundred, (4) ten - eleven - twelve - thirteen, etc. to twenty; twenty, twenty-one, etc. to thirty, etc.

Reading and Writing of Numbers

In teaching this skill, follow the steps in learning to count. Teach reading and writing of each group of numbers only after the corresponding step in counting has been learned.

Rationalization of the Number System

A Step Toward the Abstract

Experiences with dimes and pennies: (1) A dime is ten cents (2) one dime with two pennies is twelve cents, two dimes with four pennies is twenty-four cents, etc.

Experiences with bundles of sticks or other such material: (1) One bundle is ten (2) One bundle with two sticks is twelve, two bundles with four sticks is twenty-four, etc. This kind of experience should progress with learning to count. It is an important step before reading and writing of numbers and an equally important foundation for working with figures later. (See page 158)

The Addition Concept

A Putting Together--Not a Counting On

Counting on is not the addition idea. It is a method or technique for finding the sum of two groups. We never use it after we have learned the addition combination. In working with the slow child, we find that teaching him to use one method in the early stages in learning this skill and a different method later serves to confuse and discourage him. If we want the child to learn the addition idea, we had better teach him to use it from the first. Otherwise we will not understand later why he insists on counting on his fingers, and he will not understand why he should bother to learn addition combinations.

Activities which develop the addition concept: Put together two small groups, each of which the child recognizes at sight. For example, he sees at a glance that ** are two and that * is one. Together they are *** three. He can see this without counting if he can recognize as a group any three small objects as being "three".

Put together two groups of objects into groups of tens, noting the remaining ones as separate units. Then name the whole number. For example, ****** and ******* are ********** * * * or thirteen. The child explains verbally as he groups the objects. He does not write the number at this time; though later he will learn to do so.

Using pennies, put two groups together to make one group. Change each ten pennies for a dime. For example:

①①①①① ①① and ①①①①① ①①①①

are (one dime, six pennies) sixteen cents.

Using dimes and pennies, put two amounts of coins together and then separate into dimes and pennies. For example:

⑩⑩ ① and ⑩⑩⑩ ①①①

are (five dimes, four pennies) fifty-four cents.

Put together two groups of sticks into one group of ten, noting the remaining ones (units) and saying the whole number. For example, 𝍸 and ////// are -- one bundle of ten, 6 loose sticks -- 16 sticks. 𝍸 is intended here to represent a bundle of 10 sticks. ////// are intended to represent an amount less than ten -- 6 sticks.)

The Subtraction Concept--A Separating or Taking Away

This should be the first experience with subtraction because the "taking away" concept is the easiest to form.

1. Take away (withdraw) one small group of objects from a group of not more than five objects. The child reacts in this order:
   Sees five objects and recognizes them as "five".
   Sees and identifies by name the group you withdraw.
   Sees and identifies by name the remaining group. For example, "I found these five shells. You took these two. Now I have three left."
2. Take away (withdraw) a given group of objects from a group of not more than ten objects. The child reacts as above (see #1).
3. Borrowing: Take away (withdraw or separate) a group of objects from a group of more than ten objects. For example, "I had twelve nuts. I let John take eight. Now I have four left."
4. Take away an amount of money that makes it necessary to change a dime. For example, "There is a dime and two pennies in the box. I want four pennies. I will get this dime changed. Now I can take the four pennies and there are eight cents left for the box."
5. Take away (withdraw) a group of sticks from a group of more than ten sticks (13). Take away five. This means that I have to break up the bundle of ten sticks to get enough to let me have five sticks. When I do this I have eight sticks left.
6. Using dimes and pennies take away an amount that involves dimes and pennies. For example, "I have three dimes and two pennies (thirty-two cents) in my bank. I need fifteen cents (one dime, five pennies). I will change one of the dimes to get the five pennies I need. Now I have two dimes, seven cents left" (twenty-seven cents).

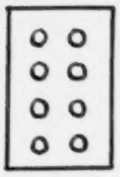
Note: There is no writing of numbers to show the subtraction process yet. There is only the activity of manipulating of materials with an accompanying verbal statement and solution of the problem.

7. Use bundles of sticks instead of dimes and pennies as above. Keep in mind always that the group is being separated not counted off.

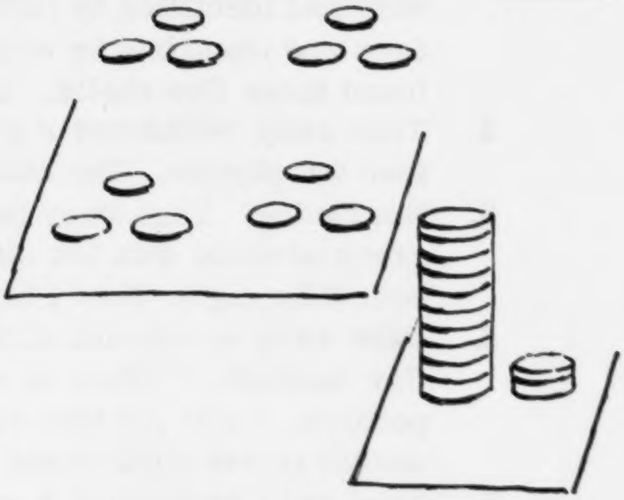
Multiplication Concept

Multiplication is a gathering in and adding groups having like quantities. The child should recognize it as a short quick method of adding. For example:

> Four children are planning how to display their pictures. "We will each need two thumb tacks to hang our pictures. Let's take them out of a box and stick them on the board. How many do we have?



> "We will each bring three cents for an acquarium." Four children put their money on the table while all watch. "Four threes." They put it all together, piling ten pennies up and seeing that there are two more besides these ten. The children say (not count), "We have twelve cents so far." The pile of ten pennies should then be changed for a dime so that twelve cents is one dime, 2 pennies.



The Division Concept

Division involves separating a larger group into smaller groups of equal amounts (as in sharing equally). The following examples illustrate the use of objects instead of numerals in the division process:

> "Let's share these shells we found together." Put them on the table and discover there are eight shells. Separate them into two groups, each group having the same amount, and discover there are four in each group.

> "This is all the green paper there is for you four children to use in making the trees for our picture. Let's share it equally." "First we must count the sheets." The children count and find there are twelve pieces. "Now count out four sheets as many times as you can to find how many each of you may have." The children count and group as they count, "One, two, three, four--one, two, three four--one, two, three, four. We took four out three times." When each child then takes one of each of the three piles, they discover that there are three sheets of paper for each of them or that there are three fours in twelve.

This type of experience will provide a foundation for use of the division process later. Note that the child worked only with the dividend 12 and the divisor 4. He worked only with objects, not numerals.

A low I.Q. child (50-60 I.Q.) will seldom go beyond stage of manipulating objects or money to solve the problems that arise in daily life. However, since his most important problems in adult life will be simple and will usually involve the use of money, he will be able to figure out these problems as described above.

Informational Arithmetic

The teacher will find outlines showing the steps of difficulty in learning to use the measures, time and money, on pp. 139-148. Check the child's readiness (foundations) for each new step before planning to teach it. Use the vocabulary that conveys the idea accurately. It cannot be too strongly urged that the teacher check for readiness for each new step in working with these children.

Outcomes Expected From This Beginning Functional Arithmetic Program

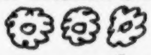
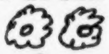
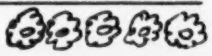
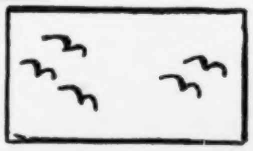
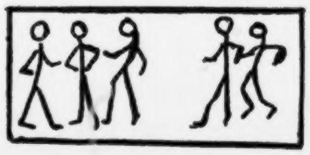
The experiences suggested above, when built upon the experiences of the arithmetic readiness program will create in the child's mind a functional attitude toward arithmetic. If he is capable of going beyond this to learn any or all of the four processes, his work with abstract number will be rich with meaning. If he is sixteen years old and about to leave school when he finishes this beginning arithmetic program, he will be equipped with a practical means of solving the simplest arithmetic problems of daily life with a feeling of independence.

ARITHMETIC: FOR THE CHILD WHO IS READY FOR ABSTRACT SYMBOLS

Foundations

Before the child reaches a readiness to use number symbols, he should have had many daily experiences in meaningful number situations. He should have learned to identify small groups of objects up to four or five and to name the quantity of each by looking at them, seeing them as a group not by counting. He should be able to figure out a problem with the aid of objects, bundles of sticks, or dimes and pennies. He should have acquired a working knowledge of what is involved in counting, in addition, subtraction, multiplication and division, and in fractions. This working knowledge should be a result or outcome of manipulating objects to solve problems that arose in various activity units, classroom situations, or home situations.

When the child shows that he knows the meaning of various number symbols in terms of use, he is ready to begin to use number symbols as tools in problem solving. With a rich background of experience in real number situations described above, we would expect him to be ready at a mental age of approximately 8 years to begin. He will show his readiness by his ability:

1. To translate a number idea from concrete objects into number symbols. For example  and  are  (concrete objects) means (number symbols)
$$\begin{array}{r}3\\+2\\\hline 5\end{array}$$
2. To translate a number idea from number symbols into the concrete objects or pictures. For example:
$$\begin{array}{r}3\\+2\\\hline 5\end{array}$$

Three birds and two birds are five birds. or

Three boys and two boys are five boys.

He should now be growing away from the need to manipulate concrete objects, toward being able to use number symbols independent of objects. The use of concrete objects in solving real problems has given him a foundation which includes a working knowledge of the four fundamental processes. He is now ready to begin to learn (master) the combinations and processes of each of these skills.

In addition to an adequate mental age, the child needs certain specific foundations before he is ready to learn each of the four skills. Foundations, together with specific suggestions for adapting material to the needs and pace of these children may be found under the separate headings: addition, subtraction, multiplication and division. (See pp. 134-137.)

Organization of the Material for Teaching

Retention of any number fact the child learns depends upon understanding, practice and drill. If in the regular grades the child has had flash card experience with the combinations, before he was mentally mature enough to have any concept of what it was all about, he probably has given up in despair. He has probably resorted to counting on his fingers for adding and makes no attempt to try subtraction, multiplication or division.

While there is nothing wrong with counting on one's fingers, if he has the mental maturity to gain a working knowledge of the four fundamental processes, we have a responsibility to find a method by which he can experience success in learning to master and use them.

We need a method that stimulates his interest, supplies practice through direct learning materials, provides drill that is so necessary for retention and takes into consideration the fact that he identifies simple combinations with failure and rejects them as "baby stuff." This calls for a radical departure from typical regular primary grade practice.

The method described below has been used successfully with these children over a number of years. It is an adaptation of a drill method first found in a 1939 book by Dr. Guy Wilson titled Teaching the New Arithmetic.[1] This adaptation of Wilson's method uses (1) materials the child is already familiar with (dimes and pennies or bundles of ten sticks each); (2) builds upon skills he has already acquired in the arithmetic readiness program; (See pp. 119-123.) (3) and goes on from there to teach the child how to use each simple number combination, in problems that involve not only units but also tens and hundreds.

In trying to help the child master these skills, we organize the 100 facts of each of the four processes into 10 groups of five facts (and their reverses) in each group. After the child learns one of the combinations in the first group we guide him to use what he already knows about the "tens" and "hundreds" by using the combination in larger numbers. For example:

$$\begin{array}{r}5\\+3\\\hline 8\end{array}\qquad\begin{array}{r}15\\+3\\\hline 18\end{array}\ \text{etc. or}\qquad\begin{array}{r}95\\+3\\\hline 98\end{array}\ \text{or}\qquad\begin{array}{r}425\\+\ 3\\\hline 428\end{array}$$

We guide him to carry the use of this simple addition combination into further practice, using it in the "tens" and "hundreds". For example, when the child learns that 5 and 3 is 8, he will go on and use this combination to find that 5 dimes and 3 dimes stacked together are 8 dimes or 80¢, that \$5.00 and \$3.00 put together make \$8.00. Thus he will use the same combination over and over providing drill that is interesting because it occurs in amounts of money within his present daily home life experience. By the time he has learned each of the five combinations in the first group, he finds they are useful in many ways. For example, if he has learned that $5 + 3 = 8$, $3 + 2 = 5$, $4 + 3 = 7$, $2 + 6 = 8$, $3 + 6 = 9$, he can use these facts in any number situation where they occur. For example, as $\$3.42 + \$2.36 = \$5.78$. This has meaning for him because he sees these numbers as \$3.00, 4 dimes, 2 pennies combined with \$2.00, 3 dimes, 6 pennies. He sees the sum of \$5.00, 7 dimes, 8 pennies. A glance at the five combinations above will alert the teacher to the many different number arrangements that can be made to provide the necessary drill for retention. As the child moves on from mastery of one group of combinations to mastery of the next, his opportunity for practice in drill increases in proportion to the number of combinations he "knows." This organization of material is valuable to the child because:

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[1] See selected references.

1. Each single group (five combinations and their reverses) sets a single limited goal. He is no longer discouraged and confused by having to learn a mass of combinations for which he finds little or no immediate use.
2. The child is given an immediate use for each combination as he works through each step of difficulty in the process. His feeling that he is making progress sharpens his interest. Interest increases his ability to learn and the discovery that he can learn gives him a feeling of pride and self-respect.

Adapt Material to Meet Need for Direct-Learning and Careful Pacing

1. Begin with the concrete and transfer by easy stages to the abstract as follows:
    Present each combination in each of the four fundamental processes in a real situation as it actually occurs.
    Discover the same combination in several different situations which involve actual materials.
    Make picture stories of these actual groupings.
    Show these same groupings with stick pictures or conventionalized drawings.
    Show several patterns for each grouping.
    Present the group in symbols using numerals (see page 106).
2. Only after being guided through each of these steps is the child ready to memorize, practice, drill and so "master" a combination.
3. Precede drill with plenty of practice.
4. Use abstract numbers for drill purposes only after each group of combinations have been learned and practiced as described above.
5. In approaching the teaching of each step of difficulty in one of the processes, show how that particular type of problem arises in real life.
6. Help the children work out the problem with bundles of sticks, or dimes and pennies, if the problem involves money. Then show them how to work out this problem by using numbers alone without aid of concrete materials. Call attention to "how fast we can solve a problem in this way."

ADDITION

Addition is important as a basic process in arithmetic. It is second only to multiplication in terms of frequency of use in adult life. Every child who has a 65 I.Q. should be able to use the addition process before leaving school.

Foundations

Readiness for addition which includes being able to:

1. Recognize without counting, groups of small objects up to the amount of 4 or 5 (See pp. 119-122.)
2. Combine two small groups and see the sum without counting (00 and 0 are 000, 3).

3. See amounts in terms of tens and units. Arrange quantities in bundles of tens and see the results in terms of tens and units--as so many tens with so many "ones".
4. Have a working knowledge of the addition idea (concept) as a "putting together".

Methods and Materials

1. Organize the addition combinations into small groups of five each (see page 133).
2. Use objects, then transfer from the concrete to the abstract.
3. Accompany the teaching of each simple addition combination with a demonstration of its use in solving problems involving larger quantities in the tens and hundreds.
4. Help him make a slide rule* to use for practice until he has memorized each group and is ready for drill. This slide rule provides continuity with his earlier idea of addition as being a "putting together", and it will prevent his forming a habit of counting on fingers or of learning errors while he is in the practice stage. In addition to the value of learning a combination through practice of correct response, there is an interest value because the child enjoys manipulating the "slide rule".
5. Provide a lot of independent drill through games and formal drill with paper work to insure retention.

SUBTRACTION

Subtraction is third in place of importance to an adult in the social usage of daily-life arithmetic. The most frequent use of the subtraction idea is making change. However, in present day usage change is not made by subtraction, but by "counting on" (see Money page 140.)

There are three different types of problems that call for the use of subtraction. In only one of these types is the subtraction idea easy to recognize. The child needs many experiences with the other two types to recognize the subtraction idea in them. The following examples show the kind of use a child will have for subtraction as an adult:

The remainder or "How much is left?" idea: This is the easiest type. "I have $5.00. If I pay $2.49 for this shirt, how much will I have left?"
The difference or comparison idea: "How much will I save if I buy this dress which is marked down from $10.59 to $7.50?"
The addition idea: "I will need $75.00 for rent. I have only $28.00 now. How much more do I need before the first of the month?"

During the years before the child reaches a mental readiness (mental age) to learn the subtraction process, he will have many, many experiences in which one or the other of the above types of subtraction will occur. He will solve these problems by means of handling and separating concrete objects or money. Through repetition of such experiences he will learn many of the subtraction combinations incidentally.

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* See page 161 on Addition and Subtraction Slide Rule.

Foundations

Readiness for subtraction includes being able to:

1. Recognize and identify by name (without counting) groups up to four or five. (See page 119.)
2. Take away (withdraw) a given amount of objects from a group of 4 or 5 objects. Then identify without counting the remaining group by number name as being what is "left". (See p. 129.)
3. Recognize the need for changing a dime into ten pennies when asked for more pennies than he holds. For example, he has one dime, two pennies (twelve cents) and needs to give me five cents. (See p. 129.)
4. To handle this type of subtraction with bundles of sticks (ten in each). For example, one bundle and two (12). The child must undo the bundle of ten sticks in order to give me five. He will then have seven sticks left. (See p. 129.)
5. Have a working knowledge of the subtraction idea as taking away or withdrawing. (See p. 123.)

Methods and Materials

1. Organize the 100 subtraction facts in groups of five each as suggested on page 133.
2. Beginning with real experiences, using objects, transfering from concrete to abstract. (See page 132.)
3. Use "slide rule" during practice with each group of combinations till memorization takes place. Practice without errors will insure later accuracy. (See page 161.)
4. Provide the necessary drill to insure retention.

MULTIPLICATION

Multiplication is the most frequently used in adult life of any of the four processes. The use of only a one place multiplier occurs in 50% of all needs for multiplication.

During the years before a child becomes mentally mature enough to begin to learn this skill, he has had many needs to add two or more equal quantities. His attention was always called to the fact that he was working with several groups each having the same amount. For example, "two threes", "four fives", etc. He has been led to discover such generalizations as: "two threes are six", "four fives are twenty". He has even written this down as follows: $\begin{array}{r}3\\ \underline{x2}\\ 6\end{array}$ $\begin{array}{r}5\\ \underline{x4}\\ 20\end{array}$ after having solved the problem with the aid of objects. He has learned some of these combinations through repeated experiences but no attempt has yet been made to "master" the multiplication combinations and processes.

He will have learned the "five times table" up to twelve "fives", if you have taught him to tell time the commercial way.

Foundations

Indications that he is ready to learn these skills are:

1. The ability to recognize common quality in groupings. For example, the twoness of ** ** **, the fourness of **** **** ****, etc.
2. An understanding of multiplication as being a short way to add.
3. The ability to add a column of four or more threes, a column of four or more twenty-fours, etc.
4. Experience with counting by tens, by twos and perhaps by threes and fives.
5. Understanding the need to "carry" in addition when he is dealing with an amount that is more than nine or more than 9 tens, etc.
6. An understanding of the function of the zero in the number system as indicating "no ones" or "no tens", etc. For example, 20 is 2 tens, no ones; 208 is 2 hundreds, no tens, eight ones.

Methods and Materials

This child will have much use for multiplication in daily life as an adult citizen. If it is at all possible to do so, he should learn as many of these combinations as he has time for. He must, of course, always be shown a use for them in adult life. We must always make sure that he understands the significance of what he is doing. We must guard *against his readiness to to* "tricks" with numbers.

1. Group the 100 multiplication facts in groups of five each as suggested on page 133.
2. Use real experiences and objects. Then transfer from the concrete to the abstract. (See 6 STEPS page 106.)
3. Provide practice in real or play situations to insure accuracy.
4. Provide the necessary drill to insure retention.

DIVISION

There are few needs in real life for division of numbers larger than 12, 24 and 36. Little time should be spent with this process beyond making sure that the children can use the most commonly used numbers in the divisor. Division problems involving numbers below 10 should be worked out by the long division method. (See page 138 for explanation.)

There are few occasions when the child faces an actual need to use division in the development of social studies or other units. The teacher will have to be alert to the possibilities for the use of division and call the children's attention to them in order to provide a meaningful background of experience. Sharing the cost of a fish bowl, of an ice cream treat or a picnic, sharing equally in the distribution of classroom materials are occasions when the child may be led to discover the need for division.

Foundations

Indications that he is ready to learn these skills are:

1. Ability to recognize common qualities in groupings.

2. An understanding that he can use a multiplication combination in learning a division combination. For example: 2 x ? = 14. $2\overline{)14}^{\,7}$
3. Understanding that division involves separating a quantity into two or more groups of like amounts as in sharing equally.
4. Working knowledge of division in terms of repeatedly subtracting the group needed and then counting the number of such groups that were contained in the original quantity.

Suggestions for Teaching Division

1. Organize the division combinations in groups of five each as suggested on page 133.
2. Be sure the child has many experiences with different materials in dividing many different groups of things including groups of coins.
3. Each time after he has divided a quantity into equal groups, the teacher should write the example in numerals to show him how he can use a division combination to find the answer faster. Set this up in the long division form
4. Teach all division by the long division method. Do not use the short division method for "short division." This saves the retarded child the confusion of learning two methods for one process. The long division method is easier for him to understand. In using this method, he is repeatedly subtracting a small group from a large one until the whole group is separated into equal groups. This is the same method he used in manipulating objects when he shared or divided things with his classmates.

LEARNING TO USE MEASURES

Measures in terms of money and time enter so constantly into every phase of our daily life that the child is always interested in them. ________ And because these measures have real meaning in his daily life he learns them more readily than any of the other measures.

There are other kinds of measures which the child may never have observed in use in his daily life outside of school, though his parents use them often in many different situations. These are measures of weight, temperature, linear measure, liquid measures, size and common fractions. For each of these there is a different kind of a U.S.A. standard measuring tool. If he is allowed to actively participate in manipulating these tools as instruments of measure, he will discover how they work and what they tell him about the things he is measuring. With his interest aroused, he will then be ready to use the measuring tools to get accurate results, add to his speaking vocabulary and gain interesting and useful information some of which he can use now and which he will carry into his adult life.

Our goal in teaching measures should be to help the child develop a functional attitude toward work with measures so that he will use what he learns now as a child and continue to use it during his adult life.

The outline that follows is organized by levels of difficulty to alert the teacher to the urgent need for careful pacing in this, as in all other work with the retarded child. Note at each level, a list of "foundations" the child needs to have acquired before beginning each new step. We have always to keep in mind that this child needs large daily doses of success in order to make progress. He cannot experience success unless he has an adequate foundation upon which to build any new learning.

MEASURES

MONEY: Levels of Difficulty

Level I

Foundations: counting to 20.

Activities: a play store will provide these experiences.

Recognizing cent, nickel, dime (use real coins).

Knowing that 5¢ = 1 nickel. A nickel or five cents will buy an article costing 5¢.

Knowing that 10¢ = 1 dime. A dime or ten pennies will buy an article costing 10¢.

Knowing that 2 nickels = 1 dime or ten cents. Either one dime or two nickels will buy an article costing 10¢.

Buying articles without making change.

Select the right coins when buying articles costing not more than 10¢.

Select either 7 pennies or a nickel and 2 pennies to pay for an article costing 7¢.

Reading and writing numerals using the ¢ mark - 15¢; 8¢; 5¢; etc. to label articles with prices limited to 20¢.

Level II

Foundations: value of cent, nickel, dime.

reading and writing of numerals to 20¢ (not the words but the figures).

Activities in steps of difficulty:

Recognizing cent, nickel, dime, quarter (use real coins) and using the ¢ mark.

Buy two articles at play store, add prices using only simple combinations.

For example: 2¢ for an eraser and 2¢ for a pencil. I pay_____¢ for both.

Make change from a nickel. (This is an activity. Do not teach as a form of subtraction.)

A notebook costs 4¢. Change: counting coins say, "4¢ for notebook 4¢, 1¢; 5¢." (Using the cashier's method of making change.)

A pencil costs 3¢. Change: counting coins say, "3¢ - 4, 5¢" (2¢ change).

An eraser costs 2¢. Change: counting coins say, "2¢ - 3, 4, 5¢" (3¢ change).

A stick of candy costs 1¢. Change: counting coins say, "1¢ - 2, 3, 4, 5¢" (4¢ change).

Reading and writing numerals to write prices to 50¢: 30¢, 47¢, 29¢, 12¢, 50¢.

Level III

Foundations: experiences and understandings of Levels I and II.

Activities:

Recognizing quarter and half dollar (use real coins).

Knowing the relative value of coins.

A quarter is: 25¢, or 5 nickels, or 2 dimes and 1 nickel, or 1 dime and 3 nickels.

A half dollar is: 50¢, or 2 quarters, or 5 dimes, or 10 nickels.

Or a half dollar may be: 1 quarter and 5 nickels, or 1 quarter and 2 dimes and 1 nickel, or 1 quarter and 1 dime and 3 nickels, or other combinations of nickels and pennies.

Making change from 10¢ at the playstore.

Article costs 5¢: change - 5¢.

Article costing from 6¢ to 9¢: A bottle of milk costs 6¢. As we make change we say, "6¢ - 7,8,9, 10¢," giving 4¢ in change.

Article costing less than 5¢: Pencil costs 3¢. Change: say, "3¢ - 4, 5, and 5 are 10¢" (2¢ and 1 nickel change).

Reading and writing numbers on price tags to 99¢, 59¢, 75¢, 40¢, 89¢.

Level IV

Foundations: experiences and understandings of Levels I - III.

Activities:

Using $ sign with whole numbers as $5, $2, $14, $25, etc.

Making change - more than ten cents but less than twenty-five cents as follows:

Change from 15¢ (dime and nickel) for articles costing 11¢ to 14¢.

Change from 20¢ (2 dimes) for articles costing 11¢ to 19¢.

Change from a quarter for:

Articles costing 20¢, change - a nickel.

Articles costing 15¢, change - a dime or two nickels.

Articles costing 10¢, change - 3 nickels or a dime and a nickel.

Articles costing 5¢, change - various combinations of nickels and dimes.

Articles costing 21¢ to 24¢, change - cents.

Articles costing 16¢ to 19¢ change - cents and nickel.

Articles costing 11¢ to 14¢, change - cents, dime or nickels.

Articles costing 6¢ to 9¢, change - cents, nickel, dimes.

Articles costing 1¢ to 4¢, change - cents, nickels, dimes.

Level V

Foundations: experiences and understandings of Levels I - IV.

Activities:

Understanding and using dollar and cents marks ($3.75).

Reading and writing dollars and cents when necessary: $4.25, $6.78, $9.05, $27.43, $25.14, $17.50.

Making change from not more than fifty cents:

Articles costing 26¢ to 29¢, from 30¢ (1 quarter, 1 nickel).

Articles costing 31¢ to 34¢, from 35¢ (1 quarter and dime or quarter and 2 nickels).

Articles costing 36¢ to 39¢, from 40¢ (1 quarter, 1 dime, 1 nickel).

Articles costing 41¢ and 44¢, from 45¢ (1 quarter, 2 dimes).

Articles costing 46¢ to 49¢, from 50¢ (2 quarters or half dollar).

Articles costing 26¢ to 49¢, from 50¢ (2 quarters or half dollar).

Level VI

Foundations: understandings of money values on Levels I - V.

Activities:

Reading or writing dollars and cents when necessary: $125.30, $550.75, $1685.90, $2540.50.

Making change from one dollar and intermediate amounts.

- Articles costing 51¢ to 54¢, from 55¢ (2 quarters, 1 nickel or half dollar and 1 nickel).
- Articles costing 51¢ to 59¢, from 60¢ (2 quarters, 1 dime or 6 dimes).
- Articles costing 61¢ to 69¢, from 70¢ (Half dollar, 2 dimes or 7 dimes).
- Articles costing 51¢ to 74¢, from 75¢ (3 quarters, or half-dollar and 1 quarter).
- Articles costing 51¢ to 99¢, from a dollar.
- Articles costing 1¢ to 51¢, from a dollar.

Level VII

For those who can learn and have some use for it.

Activity:

Reading and writing dollar and cents in numerals only: For example, $24,792.87, $15,965.70, $659,286.75, $785,728.75.

MEASURES

TIME: Levels of Difficulty

Level I

Foundations: counting to 12.

Activities:

- Knowing days of the week.
- Recognizing the calendar and understanding something of its use.
- Observing that the clock and watch tell time.
- Observing that the hands of the clock turn to the right.
- Observing the difference in the two hands of the clock.
- Observing that the long hands moves faster than the short hand.
- Observing that both hands are moving at the same time.
- Observing that there are 12 numbers on the clock face.

Level II

Foundations: counting to 31.
vocabulary: one-half, long, short, around.

Activities:

- Developing concept of hour, day, week, month, year.
  - Hour - reading period, noon hour, handwork period, etc.
  - Day - from opening of school one day to the same time the next.
    - School: morning session, lunch hour, afternoon session, after school playtime.
    - Home: dinner hour, evening, sleeping time, getting ready for school and breakfast.
  - Week - Monday through Sunday (5 school days), observe calendar week.
  - Month - represented by each month on the calendar.
  - Year - from one birthday to next, one Christmas to next, one Easter to next.
- Understanding the meaning and use of dates: holidays, birthdays, special days, etc.
- Recognizing half hours on the clock.
- Observing change in appearance of clock from hour to half hour (half-past).
- Observing that when pointing to 6 (half-past), the long hand (minute) has moved half way around the clock.
- Observing that while the long hand has moved half way around the clock, the hour hand has moved half way toward the next number.

Level III

Foundations: experiences listed above.
vocabulary: one quarter.

Activities:

- Telling time: using hours, half hours and quarter after the hour.
  - Observe that the long hand moves quarter way around the clock (to #3) while the short hand quarter way toward the next number, to show quarter after.
- Understanding the relation of hour and day, day and week, month and year.
  - Hour and day: using the clock, follow the time through daily events, from a given hour one day to the same hour the next day. Dramatize or draw

pictures of things that happen "on the hour" at various times during the day. For example, we might start with the sentence:

"School starts at 8 o'clock in the morning." Then various activities that occur on the hour during the day could be listed that way. The child could make a list or draw clocks and pictures to show activities that follow after he leaves school. For example:

"We eat dinner at 6 o'clock in the evening."

"We watch TV at 8 o'clock in the evening."

Now the hour hand has passed around the clock once from 8 o'clock in the morning to 8 o'clock at night (count 12 hours).

The hands continue to move while we are sleeping.

"We get up at 7 o'clock in the morning."

"We come to school at 8 o'clock in the morning."

"The hour hand has again gone around the clock another 12 hours from 8 o'clock one morning to 8 o'clock the next morning.

The hour hand has passed around the clock twice (24 hours - one day).

Level IV

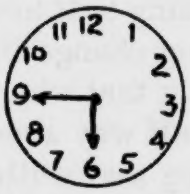
Foundations: experiences of Levels I - III.
vocabulary: minute

Activities:

Telling time at quarter of the hour.

Check the children's ability to tell time as follows: o'clock, quarter after, half-past.

Direct observation of the position of each hand at o'clock, quarter after, half-past. Watch closely the accompanying movement of the hour hand as the minute hand moves up the face of the clock from 6 toward 12. Stop the minute hand at 9. Note that this is quarter way up the face of the clock and is therefore read as "quarter of". Direct observation to the position of the hour hand. Note that it has almost reached a number. Read the time as quarter of this number.



quarter of 6.

Level V

Foundations: counting by 5's and experiences of Levels I - IV.

Activities:

Telling time at 5 minute intervals after the hour to half past. (Use clock or clock face having minute intervals marked.)

Note the minute markings - and count them (30).

Note that there are 5 of these spaces marked off between each number.

Know that these spaces represent one minute of time. (It takes the long hand one minute to move across one space.)

Know that it is 5 minutes after the hour when the minute hand points to 1. It is 10 minutes after the hour when the minute hand points to 2, etc.

Know that quarter after and 15 minutes after are the same.
Know that half past and 30 minutes after are the same.

Level VI

Foundations: experiences of Levels I - V.

Activities:

Telling time at 5 minute intervals from half-past to the next hour.

Note that minute spacing from six to twelve.

Know that we count by 5 minute intervals to read time "of" or "before" the hour. For example:

At five minutes "of" or "before" the hour the minute hand points to 11;

At ten minutes "of the hour" the minute hand points to 10, etc.

Teach from 25 minutes "of the hour" through 5 minutes "of the hour" in this manner.

Note: Materials needed for providing these direct-learning experiences are illustrated on page 162.

TELLING TIME THE COMMERCIAL WAY

Reading the Clock by Hours and Minutes

The conventional way to teach children to "tell time" was outlined by levels of difficulty on pages 143-145 to alert the teacher to the child's need for careful pacing to insure his success in mastering a new skill.

We should probably raise a question, however, as to whether this method of "telling time" by half past, quarter after, ten after, quarter of, etc. is really relevant to present day needs. TV and radio schedules, bus and airplane schedules all give the time in hours and minutes. Every child will eventually need to learn to read the clock by this method to interpret time schedules.

The mentally retarded child has so much to learn and so few learning years. Are we perhaps wasting his time by requiring him to learn two methods of "telling time?" In learning to tell time by hours and minutes, the child's interest would be high because he sees a need for it; practice would be provided because he will use this at home; drill would be provided by continuous use of this skill, day after day, year after year. It will be useful in adult life on the job and in the community.

In the outline that follows, the process of learning this skill is divided into four steps or levels. Listed under each level are: (1) foundations necessary before beginning each level, (2) materials needed to provide direct-learning experiences, (3) experiences the child needs for mastery at each level. Illustrations of materials for each level are on pages 163-164.

Level I

Foundations: Speaking vocabulary: names of numerals through 12, short-long, shorter-longer, "hand" as used to name each of the two moving parts on the clock.

Materials: The real clock, large cardboard clock with removable hands, hour timer.

Experiences:

1. Child compares the length of "hands". Names the shorter one "the short hand." Put the short hand back on the clock.
2. Child observes teacher set cardboard clock, with short hand pointing to one hour later than that seen on the real clock. (See Figure I, page 163.)
3. Child sets timer for one hour.
4. When timer rings, child discovers that short hand on each clock points to the same numeral (Several days of experience with this during each hour of the school day may be needed until child understands that it takes one hour for the short hand to move from one numeral to the next.)
5. Learning that the starting point is from the top of the clock. The short hand takes one hour to move from the 12 to the 1 ------
   and that is what the 1 tells us "ONE HOUR."
6. That each numeral on the clock face tells us how many hours the short hand has been traveling. ------ 2 hours, 3 hours, 4 hours, etc.
7. Understanding that when the short hand points to 1 it is saying "one hour." (The temptation to use the word "o'clock" must be resisted

because when the child later learns to read the minutes he will not use this word. The word "o'clock" could be added to his speaking vocabulary at a later time.)

Level II

Foundations

1. Mastery of Level I.
2. Experience in expressing "ten" idea by fastening together a bundle of sticks for each ten sticks when the amount is more than 9. (See pp. 127 & 163.)
3. Seeing two bundles of ten sticks each as 20, three bundles, 30, etc.

Materials: minute timer, 60 sticks, cardboard clock face (from which the hour hand has been removed), long hand.

Experiences:

1. Using the timer discovers that the long hand takes only 5 minutes to move from one numeral on the clock to the next (many experiences with this).
2. Using sticks, learn to count by 5 to 60 (see page 163 for illustration).
3. Observes the minute intervals on the minute timer.
4. Sets timer to ring in 5 minutes -- observes that the long hand has moved from one numeral to the next when the timer rings.
5. Learns that when the long hand points to 1 it is saying "one five", when it points to 2 it is saying "two fives", etc.
6. Comparing this new learning with what he has learned about the short hand.
7. Using this new knowledge about the movements of the long hand to make a cardboard clock face tell what the long hand is saying as it points to each numeral, one five, two five, three five, etc. (See Figure II on page 163.)

Level III

Foundations

1. A working understanding of what has been learned on levels I and II.
2. An ability to count to sixty.
3. Ability to read and write numerals through sixty.

Materials: A large cardboard clock face marked off clearly for minutes. A real clock marked off clearly in minutes.

Experiences:

1. Child observes the dots or lines that appear between each numeral on the clock face (both the real clock and the cardboard clock face).
2. Counts the spaces between each of these marks. Discovers there are five spaces. Checks to see if there are five spaces between each of the numerals.
3. Beginning from the top of the clock (12), counts the spaces and discovers the numeral 1 at the end of the fifth space. He remembers that the 1 means one five when the long hand points to it; that 2 means two fives, etc.
4. Using bundles of sticks, works out the number of minutes each numeral

   1 2 3 4 5 6 7 8 9 10 11 12

   stands for ------ 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60 minutes. (See Figure III, p. 164.)

Level IV

Foundation

A working understanding of Levels I, II, and III.

Materials: small numbers on gummed paper 1 through 60, clock face marked off clearly for minutes.

Experiences:

Paste appropriate numeral above each space (1, 2, 3, 4, ________ 6, 7, 8, 9, ______ etc. (See Figure IV on page 164.)

Now uses this new learning to read and write time by hours and minutes. 9:32, 10:55, etc. Practices this new skill using cardboard clock to which both hour and minute hand have been attached.

Drills for retention of new learning by setting cardboard clock to time as shown on daily schedule for school-day activities, on TV and radio schedules, bus and airplane schedules, parking garage ticket, etc. Observing that by the time the minute hand has reached the 60 at the top of the clock the hour hand has moved to the next numeral so that, for example, 9:60 is a new hour which we read 10:00. Practice this new learning by finding schedules in the newspaper that list activities on programs beginning on hour 1:00, 2:00, etc.). Learn to read it (1 o'clock, 2 o'clock, etc.). Learn to write it 1:00 p.m., 10:00 a.m., etc.

Level V

Foundation

A working understanding of Levels I, II, III, IV.

Materials: A clock-face marked off in minutes 1 to 60.
A real clock with marks or dots for minutes.

Experiences:

Learn to set hand on cardboard clock to any given time in response to either a verbal or written direction.

Independently read real clock to tell time accurately.

A FUNCTIONAL ARITHMETIC VOCABULARY

To Be Acquired
Along the Direct-Learning Route to Arithmetic Goals

This is a speaking vocabulary in terms of use. It is not necessarily a reading or writing vocabulary.

Group Concept

Foundation Vocabulary for Addition and Subtraction

The understanding of all of the following words should precede any work in addition and subtraction.

many, few, some, more, most--the same as, as many as, as much as--a great many, all, enough--all, none, --few, fewer, fewest--more, less--more than, less than--how much, how many--pair (pr.), both.

Addition

Necessary for Establishing the Addition Concept

some--more--how many--how much--all--both.

Counting

Quantity: more (6 is one more than 5)--all (count all the books).
each- every (count each one or every one).

Number Names: one, two, three, four, five, six, seven, eight, nine, ten.
ten, twenty, thirty, forty, fifty, sixty, seventy, eighty, ninety, one hundred.
eleven, twelve, thirteen, fourteen, fifteen, sixteen, seventeen, eighteen, nineteen.

Ordinals: Indicating order of sequence in a series. (It is seldom possible to teach more than one ordinal in a single lesson.)
Foundations for learning to use ordinals: left, right (to precede work with ordinals).
---next to, between (should precede work with the ordinals - second, third, fourth).
---after, before, referring to place of numbers in a series; for example, 5 is after 4; 3 is before 4).

First through thirty-first (for use with calendar)--first, last.

Space and Position: Ability to use and understand the following words will enrich the children's use of the ordinals at all levels. These words, however, will be used in many other contexts than with ordinals.

on, in, over, under, above, below--among, between--middle or center--top, bottom, middle--near, far--nearer, farther--nearest, farthest--near, nearer, nearest--far, farther, farthest--close, closer, closest--high, low--higher, lower--highest, lowest--high, low, center--high, higher, highest--low, lower, lowest.

Reading and Writing Numerals: These words are useful in oral vocabulary for establishing an understanding of the number system--zero, ones, tens, hundred, thousands. The writing of number names is necessary in writing checks, money orders, receipts, etc. (See page 49.) The teenager child will need to know how to write number names.
Speaking vocabulary useful in learning the addition process: count--score--add, addition, combination--column--total--carry-single, double, check.

Subtraction

Necessary for establishing the subtraction concept and useful in problem solving: take away, away from, gave away (necessary for establishing the subtraction concept)--less--leaves--from, left--less than, more than. (See Group Concepts page 129, Foundations for Subtraction, p. 136.)
Speaking vocabulary useful in learning the subtraction process: subtract, subtraction--remainder--increase--difference--check.

Multiplication

Speaking vocabulary useful but not necessary in learning the multiplication process: double--carry--multiply.

Division

Necessary for development of the division concept: share--divide--part of.

Measures

Time

Calendar: today, tomorrow, yesterday (understanding and use of these should precede any work with calendar at beginning level)--day, week, month, year--shorter, longer (referring to months or change in length of days throughout the year)--calendar, date - day (da.), month (mo.), year (yr.), Sunday (Sun.), Monday (Mon.), Tuesday (Tues. or Tue.), Wednesday (Wed.), Thursday (Thur. or Thurs.), Friday (Fri.), Saturday (Sat.)

Clock: longer, shorter (should be understood in order to compare size of clock hands as an aid in recognizing hour and minute hands)--slower, faster (should be understood in order to compare the amount of time it takes each hand to complete the circle of the clock's face)--o'clock--hour (hr.)--half hour--quarter hour--past, after--of, before--minutes (min.)--seconds--Roman Numerals to XII--A.M., P.M.

Ages: old, young--older, younger--oldest, youngest--old, older, oldest--young, younger, youngest.

Related Words: As related to time of arrival or departure or the time element in any sequence - before, after--early, late.
As related to speed of means of transportation or of means of communications; and

As related to time consumed in getting from place to place or in communication. For example, walking, running--streetcar, bus or taxi--bicycle, car, boat, train or airplane--regular mail, special delivery or airmail--telegram or telephone--boat mail or cable.
slow, fast-slower, faster-slowest, fastest--slow, slower, slowest--fast, faster, fastest.

(See outline showing how to break up "telling time" into small teaching units and so to pace the work to the slow child's rate of learning, pages 143-148.

Money

Coins: cent - penny (¢)
nickel
dime
quarter
half dollar
dollar
decimal

Teach for permanence, and use in classroom only as found in daily use. The cent mark (¢) should only be used for marking prices less than $1.00 as used commercially. In solving problems involving money, use only the decimal point thus:

$$\begin{array}{r} .06 \\ \underline{.04} \\ .10 \end{array} \qquad \begin{array}{r} .03 \\ \underline{.02} \\ .05 \end{array}$$

Commercial terms: at @--receipt--bill--check--pay, cost, price--buy, sell--value, discount.

(See outline of steps in teaching the value of money. Note how teaching is broken up into small steps to pace work to child's slower rate of learning, pages 140-142.

Linear: Height or Depth

These terms would be foundations for work in measuring heights or objects with yard stick and height of persons as indicated on health scales. Experience with and use of these words should precede work with such standard units of measure as yardstick, foot rule, etc.
short-tall, high-low, shorter-taller, higher-lower, highest-lowest, shortest-tallest, short-shorter-shortest, tall-taller-tallest, high-higher-highest, low-lower-lowest, deep-deeper-deepest.

Length: These terms would be used in comparison of classroom or schoolyard equipment or with materials brought into the classroom. Experiences with these words should precede work with standard units of measure such as yardstick or foot rule.
short-long, shorter-longer, shortest-longest, short-shorter-shortest, long-longer-longest.

Width: Experiences in comparing various widths of common articles and addition of these words to the child's speaking vocabulary should precede work with the inch measure.
Thick-thin, wide-narrow, wider-narrower, widest-narrowest, wide-wider-widest, narrow-narrower-narrowest, broad-broader-broadest.

Names of standard units of linear measure: inch (in or ") -- yard (yd.) -- foot (ft. or ')--half inch(1/2")--quarter inch (1/4")--half yard--quarter yard.

Name of measuring instruments: rule, yardstick, tape measure, etc.

Temperature: hot, warm, cold, hotter-colder, hottest-coldest, hot-hotter-hottest, cold-colder-coldest, degree, zero, freezing, room temperature, normal.

Packaging Terms: Important units of measure - dozen (doz.) -- half dozen--gross.

Liquid Measure

pint (pt.)
quart (qt.)
half-pint
gallon (gal.)
half-gallon
fluid ounce (oz.)

Experiences should extend beyond the quart milk bottle to include all quart bottles, jars, or containers and to verify or determine amount each holds by use of U.S.A. standard qt., pt., and oz. measures. These standard measures are necessary materials for teach-liquid measures. This is informational arithmetic on one type of protection the U.S. Government provides for its citizens. (See Growing Up in a Democracy chart.)

Weight

Comparative terms: These words should be in the children's speaking vocabulary as a result of having observed the effect of objects as being heavy or heavier, light or lighter on a balance such as a see-saw or balance board and scales. Also experiences in judging weights by lifting a weight in each hand.

light, heavy, lighter-heavier, lightest-heaviest, light-lighter-lightest, heavy-heavier-heaviest.

Standard of measure:

pound (lb.)
half pound - The child will need to observe that size and weight have no relationship; for example, compare the weight of 1 lb. rice, 1 lb. coffee, 1 lb. sugar, 1 lb. meat, etc. (different sizes, same weight).

ounce (oz.) - To read and understand content in ounces in terms of ounce in measuring cup (dry or liquid measure).

ton (T.) - In terms of truck weights, ship cargo, etc.

scales - As a "U.S. standard measure" tool for weighing. The pound, half-pound and ounce U.S. standard weights are necessary materials for teaching weight in the classroom. A trip to see truckloads being weighed is a necessary experience.

Dry Measure

The child will find a use for dry measure in following a recipe. Terms used are chiefly in cups, 1, 1/2, 1/3, 1/4 cups. Except for a few vegetables that are sold by the "bunch", most vegetables are now sold by weight (lb.). Pecks and bushels, etc. are now part of informational arithmetic about now and long ago.

Sizes

Concepts to be arrived at through early arithmetical experiences as foundations for learning actual sizes at a higher level. These words should be in the speaking vocabulary of the child and many actual experiences with comparison of objects should have taken place long before work with sizes is attempted.

big, little, large-small, too big--too little, larger-smaller, largest-smallest, big-bigger-biggest, small-smaller-smallest, large-larger-largest.

Forms: In terms of common articles or designs - circle--square--triangle--rectangle.

Fractions

whole--part of--half--one half--both--a quarter--a third.

Understanding of these words should come about through many varied experiences with wholes and halves during the arithmetic readiness program and first level so that the words become a part of the child's meaningful speaking vocabulary. Care should be taken that the child understands that one-half represents an exact separating into two parts rather than merely a ''part of'' an object, or of a group of objects; that one quarter is one of four equal parts, etc. It is practically impossible to cut an apple in half (2 equal parts) as we would soon find out if we weighed the two ''halves''. It would take a mathematician or an engineer to cut pie into four or eight equal parts. He would have to use a measuring instrument to find the exact center and his mathematical knowledge of measuring the circumference to mark off four or eight pieces of exactly the same size. The retarded child's learning years in school are so shortened by his slower rate of maturing (I.Q.) that we must not waste his time with inaccuracies. Thus, if we are going to teach fractions, we must show him the division of a whole into exact equal parts. There are many things that can be divided into exact equal parts by folding them.

U.S. Mail: one cent stamp--5 cent stamp--6 cent stamp--Special Delivery stamp--Air Mail stamp--parcel post--first class--second class--third class rates--schedules (A.M. and P.M.).

SOME REMINDERS TO THE TEACHERS OF THE 3 R's

1. Be sure the child is mentally mature enough for what you plan to teach.

2. Be sure you meet his need for direct learning.
   Use all available home, school, community resources for first hand experiences, with the addition of TV, movies, slides, pictures, and models for observation and study of things that cannot be experienced at first hand. Be sure he never merely learns by rote but always to the point of use. Be particularly on guard against rote learning in arithmetic.

3. Teach for permanence. Avoid teaching what must be retaught; for example, phonograms taught in primary grades confuse the child later when he tries to use syllabification.
   The exaggerated sound of b, d, p, as it is sometimes taught in phonics (buh, duh, puh), gets in the way of his independence in attacking on new words.
   Learning to spell the word aloud makes correct spelling in written language difficult.
   Short division makes long division a confusing process.
   TV, bus and other schedules require a different and simpler method of telling time than the traditional method with its difficult "after", "past", "of", or "before" concepts. Why not teach it from the start?

4. Evaluate what we plan to teach the child in terms of the relationship between his rate of mental growth (I.Q.), the number of school years remaining and his future needs as an adult citizen. (All this with due regard to his needs and rights as a child).

5. Remember that regardless of the variety or amount of interesting, happy, meaningful experiences you may provide for the child, if you do not help him to make generalizations and see relationships, his days will be filled with a happy mass of blurred separate incidental happenings. And learning will not result.

6. Beware of verbalization. He may seem interested and attentive to your verbal discourse but it will not occur to him that you expect him to know and use what you have been talking about.
   He learns best by doing, seeing, handling and the like.

7. Keep yourself in the background to insure maximum pupil participation and pupil responsibility in class activity. The retarded child's sense of insecurity makes him "a leaner." He is not apt to take responsibility unless we encourage him to do so or to act independently unless we insist on it.

NON-ACADEMIC EXPERIENCES

The teacher will note that the entire section on curriculum adjustment has dealt only with the 3 R's and Social Studies and Science, omitting mention of such non-academic subjects as art, music and physical education. It is, however, only in the academic subjects that the "mentally retarded educable" child urgently needs curriculum adjustment, if he is to become a happy self-supporting, self-respecting citizen.

Except for a small percentage of these children who lack muscular coordination to a marked degree, the average "mentally retarded educable" child differs little and sometimes not at all from the average "normal" child in non-academic subjects. To make this point clear, let us take for example the third grade children in any school. A psychological examination would give us three classifications for these children: "mentally retarded educable" children, "normal" and "superior". On this basis, we might then place them in three separate third grade classes. However, this same group of eight year olds (3rd grade children) would separate into entirely different groups if grouped on the basis of ability in music, art or physical education; again one would have groupings of low, medium (normal) and high or superior but the low group would now include some of the "superior" children, some of the "normal" children and some of the "mentally retarded educable" children. This would be true also of each of the other two groups.

I.Q. does not enter into the picture when we play in the band, sing in the glee club, paint a scene, or model, dramatize or dance. Football, baseball, running, jumping, swimming and the like depend on muscular coordination and timing, not on I.Q. These non-academic subjects give us our opportunity to provide within the framework of the school situation a continuous direct-learning experience with democratic community life, by scheduling the "mentally retarded educable" child wherever possible, with the rank-and-file of the children of the school in music, art, shop, garden, assemblies, physical education, athletics and the like. (See Guiding Principles, page 3.)

This type of scheduling will provide equality of opportunity for all children of high or low I.Q. because in each of these non-academic subjects there are children who have special abilities and those who have special needs. For some, this will mean a chance to develop their talents to the fullest extent for leisure time enjoyments and possibly for a vocation. For others, it will mean simply enrichment through some degree of appreciation of art or music; or in the field of physical education, better coordination or better posture through correctional exercises. It is through these non-academic activities that the mentally retarded educable can maintain contact and comradeship with the "normal" child and find friends among those children who enjoy the same kind of things he does.

One dreams of the day when the gap between what we know about children and what we do about them will be closed; when the school systems of the U.S.A. will be willing to drop the traditional idea of grading children in terms of academic ability and accept the children's own natural interests for grouping.

Then every child will be part of a little age-group of friends with some common dominant interest in art, music, drama, athletics, garden, science, shop, literature, languages and so on.

Then the ''mentally retarded educable'' children will not be strangers to be stared at, and avoided by the children in the regular grades.

Then the homeroom will never (as sometimes happens now) deteriorate into a place for reporting-in in the morning and checking-out in the afternoon and the keeping of pupil records, but rather it will, like home or club, be a gathering place for folks bound together by a tie of common interest.

Then there would be no more stigma attached to leaving the room for a period or two in beginning reading than there would be for going to a class for developing good posture or the beginnings of art.

The opportunity to identify himself with a group of friends who like what he likes, is the kind of experience that tends to foster any child's sense of emotional security, that cornerstone of good human relationships. It is a kind of natural grouping that children do out of school. It also is the kind of grouping adults do naturally and voluntarily in their social life.

The academic subjects are the necessary tools for daily life in a democracy, but the non-academic subjects are the keys for fuller richer living. The ''mentally retarded educable'' child has no less need for these than any other child.

Keep your eyes on the wagon
You've hitched to a star
While creatively working
With things as they are.

Alice W. Wygant
1968

APPENDIX A

DIRECT-LEARNING MATERIALS

Group Concepts - (before counting)

50 open boxes each containing from 1 to 5 small objects, common to the child's experiences. For example, 10 boxes each containing 1 different object, 10 boxes each containing 2 different objects, etc. These may be buttons, shells, pennies, nails or the like. Fasten cellophane over top to keep objects in box and to permit child to see at a glance (not count) how many are in each box. The following are suggestions for using this material for practice. This type of practice should come after the child has had experiences involving the group idea. The teacher will find other valuable usage for these groupings.

1. Show 5 boxes, each containing from 1 to 5 objects.
   "Give me the box that has the most in it."
   "Give me the box that has the least in it."
   "Give me a box that has more than this in it."
2. Show the entire pile of boxes.
   "Give me all the boxes that have this many in them."
   That have 2 in them, 4 in them, etc.
3. Show a box with one, two, three or four objects in it.
   "Give me the box that has one more than this."
   "Give me the box that has one less than this."

(See page 160 for illustrations.)

Counting

1. Stones for game scores: Before the child has learned number names beyond ten, use stones, shells or cardboard disks for keeping individual scores in games. Provide small bags to put each ten stones into as the score accumulates. This provides a good foundation experience for learning the "mileposts" in counting and for understanding the place system in numbers.
2. The "Mileposts": 10, 20, 30, 40, 50, 60, 70, 80, 90, 100 to aid in establishing meaning (to realize that 80 is 8 tens). Draw ten circles on each of 10 strips of heavy cardboard. Put a hole in the ends of each strip so that it may be hung on a counting board. One strip represents 10, 3 strips 30, 4 strips 40, etc. (See page 160 for illustration.)
   Directions: Show me 20, show me 80, show me 50, etc.
   Show me 10, show me 20, show me 30, etc.
3. Put 10 cup-hooks or small nails in 10 rows of 10 each on a board. Buy 100 small 1-1/2" disks in the five and dime store. Number the disks from 1 to 100 on one side. Have the children turn up the numbered side of the disks as they progress in learning to count. For example, 1 through 10, 10-20-30-40-50-60-70-80-90-100, the numbers between 10-20, 20-30, etc.

(See page 160 for illustrations.)

4. To aid in building an understanding of the place system, bundle sticks into bundles of 10 each. Fasten each bundle with a piece of wire tape like that used by stores. As each bundle will have 10 in it, the child can readily

see that 3 bundles are 30, 5 bundles 50, etc. He can put 10 bundles together with a wire tape to make 100 or 10 bundles of 100 each together to make 1000. He can see that one bundle and 3 loose sticks is 13, two bundles and 5 loose sticks is 25, etc. (Any thin short sticks can be used. All must be identical in both color and size.)

Addition and Subtraction

Make a "slide rule" for each child. If the child uses this "slide rule" until he is ready for mastery of the addition and subtraction combinations, he will never depend on finger-counting. (See page 161 for illustration and directions for making.)

Use bundles of sticks (10 in each) for deepening the understanding of the addition process.

1. **///// ///// // Putting these sticks together, the child discovers he has 10 (enough for one bundle) and two more or 12 sticks.**
2. **卌/// and // is fifteen (卌 REPRESENTS A BUNDLE OF 10 STICKS). The child will put 10 sticks into one bundle and the 2 loose sticks with the three loose sticks to discover he has 15.**
3. **卌 卌// and 卌// is thirty-four. By putting together the three bundles and the 4 loose sticks the child sees that he has 34.**
4. **卌///// 卌////// By putting together the 2 bundles and then the 5 and 6 loose sticks, the child discovers he has enough for another bundle of 10 and so has 31 sticks.**

The reverse procedure may be used with subtraction.

Measures

Foot Rule: Cut 12 pieces of heavy tag board. Make each piece 1 inch longer than the preceding one and number the pieces in order of length from "1 to 12." Fasten the pieces together with a paper fastener so that any single unit of measure "2 inches, 3 inches, etc." can be taken out of the ruler and used to find, for example, things that are almost as long as or wide as and high as, things that are a little more than but not quite, etc. (See illustration and directions for making, page 162.)

Clock

Let the children handle and compare the length of the 2 clock hands to identify the hour and minute hand. Use 6 masks cut the same size as the face of a clock for each step in learning to tell time. Each mask to show one of the following:

1. The o'clock number (12).
2. The half past number (6).
3. The before or of side of the face.
4. The after or past side of the face.
5. The "quarter past" or 15 minutes after or past section of the clock face.
6. The "quarter of" or 15 minutes to or of section of the clock face.

(See page 162 for illustrations. For illustrations of 5 steps in reading and commercial way, see pages 163-164.)

Using a Piece of Composition Board

Cut out a circle, the size of a real clock. Below this draw a large clock face. Set hands for a stated time and have the children watch for the hands of the real clock to reach the same numbers. For example, "We'll stop work at 2 o'clock. It will be 2 o'clock when the real clock looks like this" (setting the hands for the cardboard clock face at 2 o'clock).

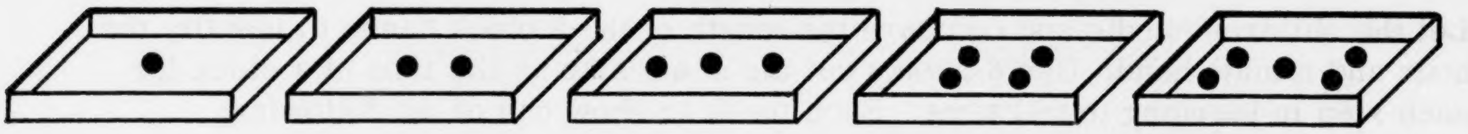
Weight

Use the see-saw or any balance board to compare weights of children and of various objects. This experience builds a vocabulary and understandings that provide a good foundation for later work with weights (pounds, ounces).

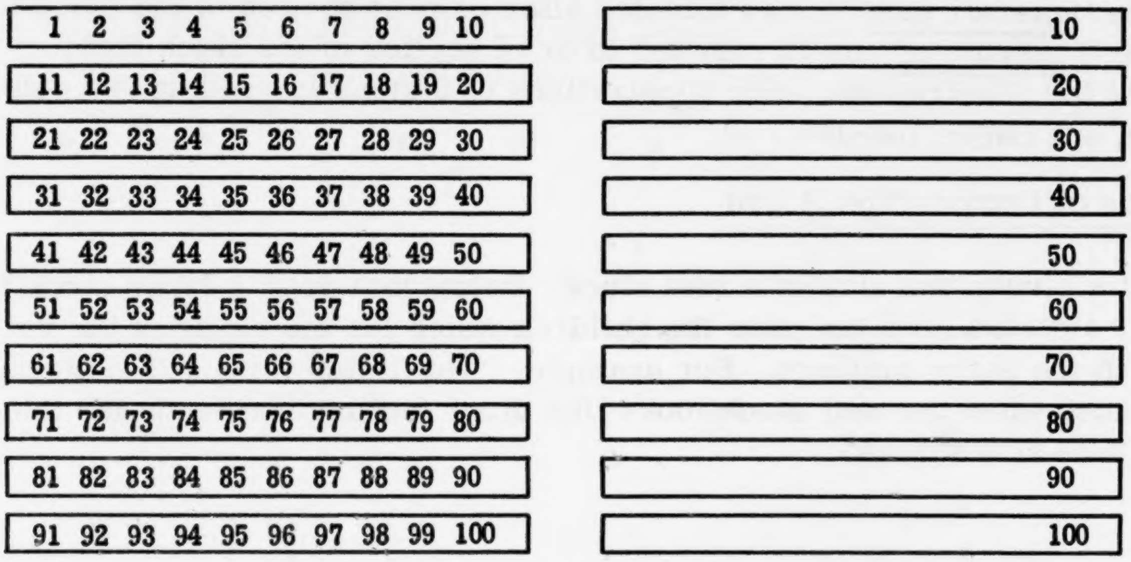
Provide U.S.A. standard weight measures for the children to handle, examine and use to check actual packages or containers marked 1 lb., 1/2 lb., 1 oz., etc. Weigh many different kinds of articles to make the child aware that size has no relation to weight, and therefore realize the importance to the citizen of the U.S.A. standard measures. (See Growing Up in a Democracy.)

Provide a U.S.A. standard qt., pt. and oz. measure for measuring liquids and for checking amount various containers will hold. Use many different shaped containers for each unit of measure to deepen the child's understanding of the importance of U.S.A. standard measures.

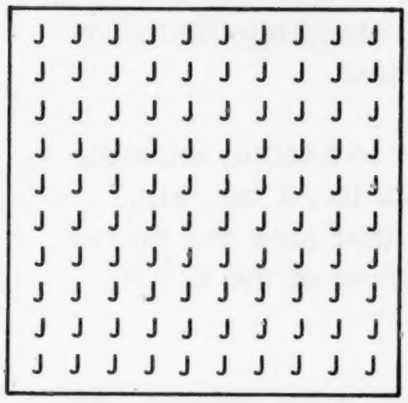
DIRECT-LEARNING DEVICES FOR BEGINNING ARITHMETIC



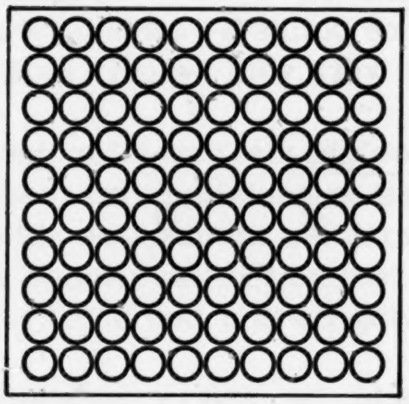
Small shallow boxes in several sets of 5 each. Each set containing a different kind of small object. 1 - 5 objects in boxes of each set (see p. 157 for making and using).


1 2 3 4 5 6 7 8 9 10
11 12 13 14 15 16 17 18 19 20
21 22 23 24 25 26 27 28 29 30
31 32 33 34 35 36 37 38 39 40
41 42 43 44 45 46 47 48 49 50
51 52 53 54 55 56 57 58 59 60
61 62 63 64 65 66 67 68 69 70
71 72 73 74 75 76 77 78 79 80
81 82 83 84 85 86 87 88 89 90
91 92 93 94 95 96 97 98 99 100
10
20
30
40
50
60
70
80
90
100

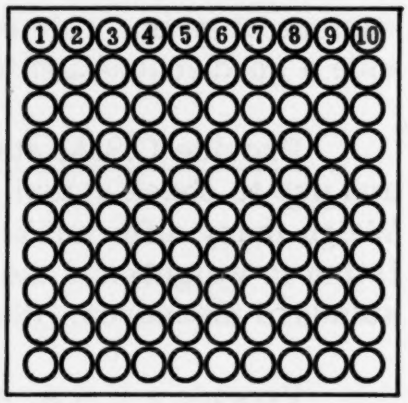
Strips of cardboard each numbered on one side; "mileposts" on reverse. See p. 127 and 157.



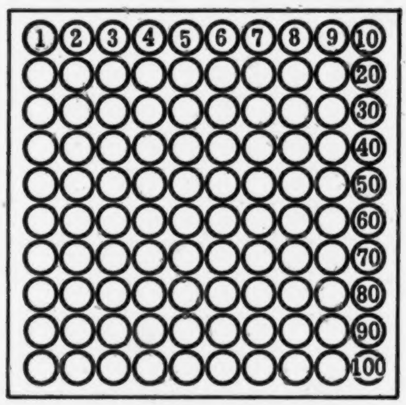
1. 100 hooks on a counting board.



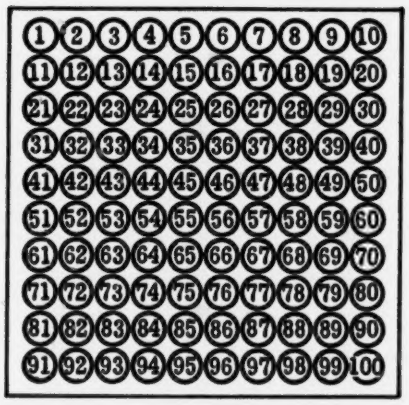
2. 100 disks on the board. Numbers on reverse side not showing


1 2 3 4 5 6 7 8 9 10

3. Disks reversed to show numbers to 10 as children learn them.

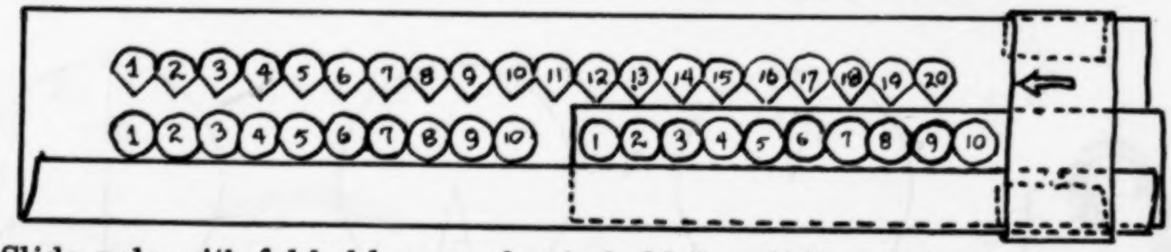

1 2 3 4 5 6 7 8 9 10
20
30
40
50
60
70
80
90
100

4. "Mileposts" added as children learn them.

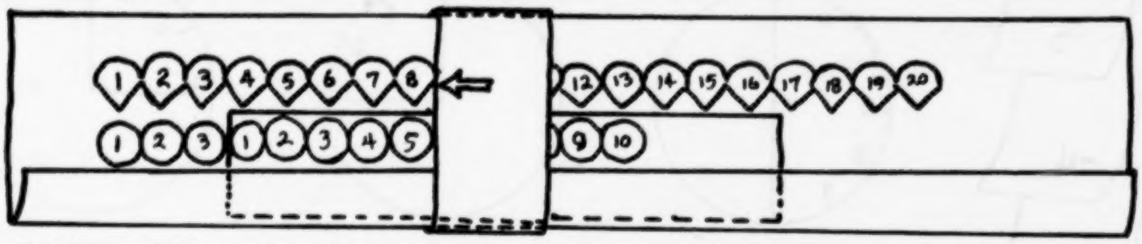

1 2 3 4 5 6 7 8 9 10
11 12 13 14 15 16 17 18 19 20
21 22 23 24 25 26 27 28 29 30
31 32 33 34 35 36 37 38 39 40
41 42 43 44 45 46 47 48 49 50
51 52 53 54 55 56 57 58 59 60
61 62 63 64 65 66 67 68 69 70
71 72 73 74 75 76 77 78 79 80
81 82 83 84 85 86 87 88 89 90
91 92 93 94 95 96 97 98 99 100

5. All numbers exposed as children learn them.

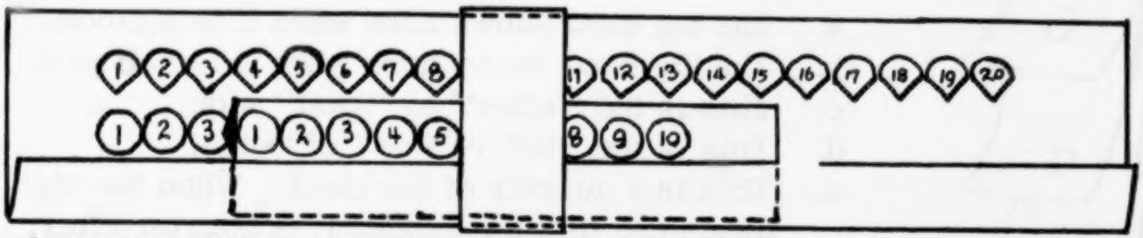
AN ADDITION AND SUBTRACTION SLIDE RULE


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
1 2 3 4 5 6 7 8 9 10
1 2 3 4 5 6 7 8 9 10

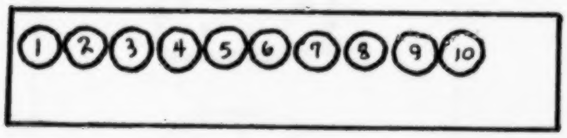
a. Slide rule with folded lower edge to hold the sliding strip.
b. Sliding strip which moves along the rule to the first number in the addition combination.
c. The stop slide which moves along the sliding strip and stops at the edge of the second number in the combination. The arrow at the top of stop slide points to a balloon which carries the answer.


1 2 3 4 5 6 7 8
12 13 14 15 16 17 18 19 20
1 2 3
1 2 3 4 5
9 10

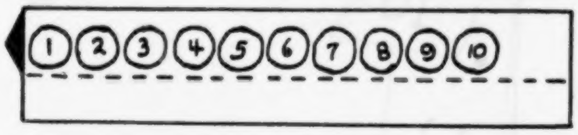
The addition slide rule showing the combination of 3 and 5. Note the sliding strip stops at 3 (showing 3 circles); the stop slide stops at 5 (showing 5 circles) and the arrow points to 8 (the answer).


1 2 3 4 5 6 7 8
11 12 13 14 15 16 17 18 19 20
1 2 3
1 2 3 4 5
8 9 10

The subtraction slide rule with stop slide reversed to hide arrow. This rule shows how to find the remainder for 8 - 5. The stop slide is fixed at the 8th balloon. The sliding strip is fixed at 5 against the stop slide. The arrow on the sliding strip points to the answer in the lower row of circles.

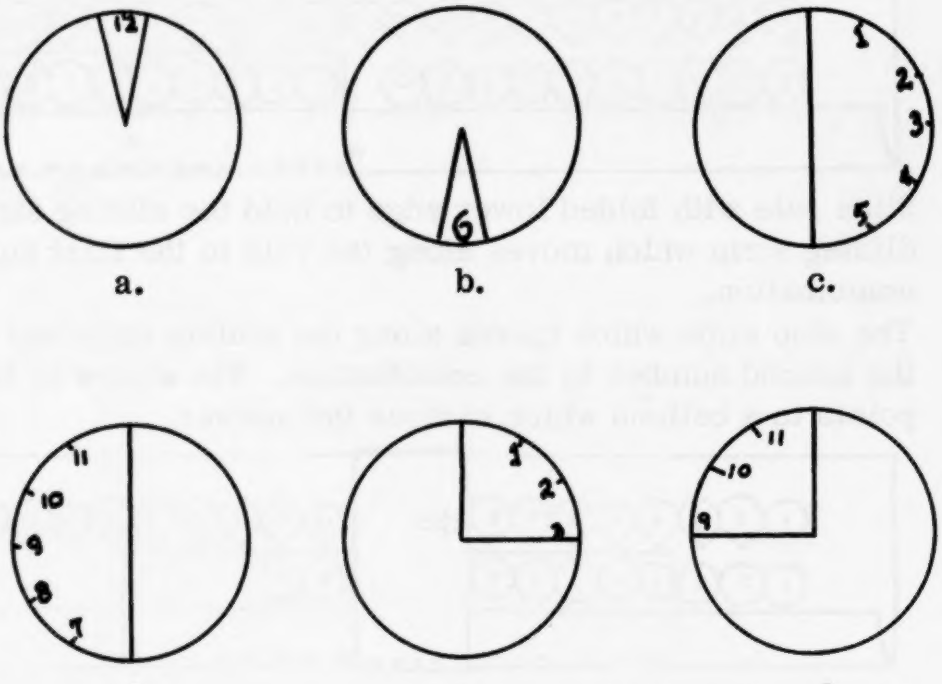

1 2 3 4 5 6 7 8 9 10

The sliding strip with arrow folded back, as used for addition


1 2 3 4 5 6 7 8 9 10

The sliding strip with arrow pointing as used for subtraction.

Note: Suggestions for use with the mentally retarded educable child may be found on on p. 135, 136 in this Guidebook.

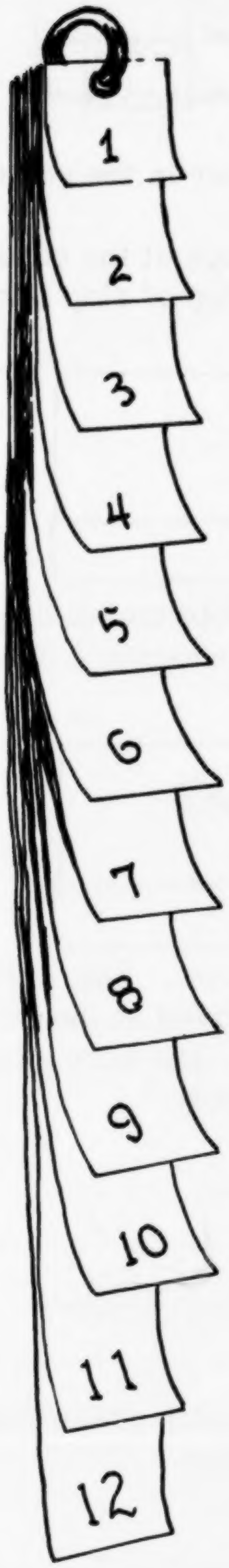


a. b. c.

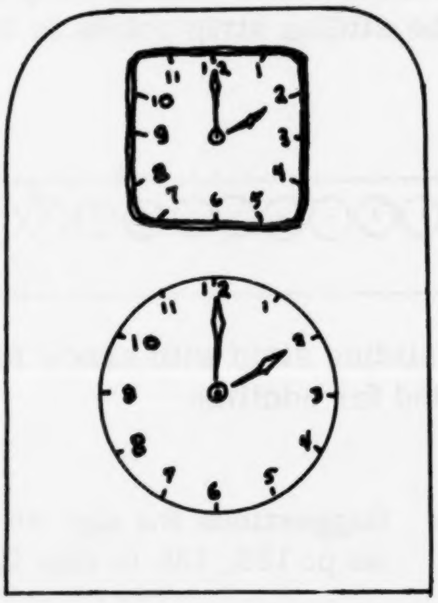
d. e. f.

Six Masks to Cover the Clock Face
Steps in Teaching Time

- **a.** **The big hand shows here when it is o'clock.**
- **b.** **The big hand shows here when it is half past.**
- **c.** **This is the "after" or "past" side.**
- **d.** **This is the "before" or "of" side.**
- **e.** **This is a quarter of the clock. When the big hand goes this far around it is quarter after.**
- **f.** **This is a quarter of the clock. When the big hand goes this far it is "quarter of."**



A ruler that "comes alive".
A ruler made up of 12 units, each one inch longer than the preceding one. See p. 158 for description of use.



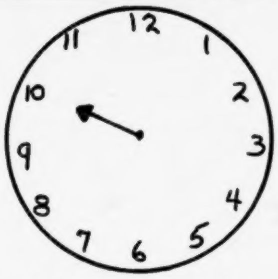
A little real clock and a big cardboard clock set in a wooden frame. See p. 159 for description of use.

SEQUENCE IN TEACHING A NEW SKILL

Learning to Tell Time the Commercial Way

Level I

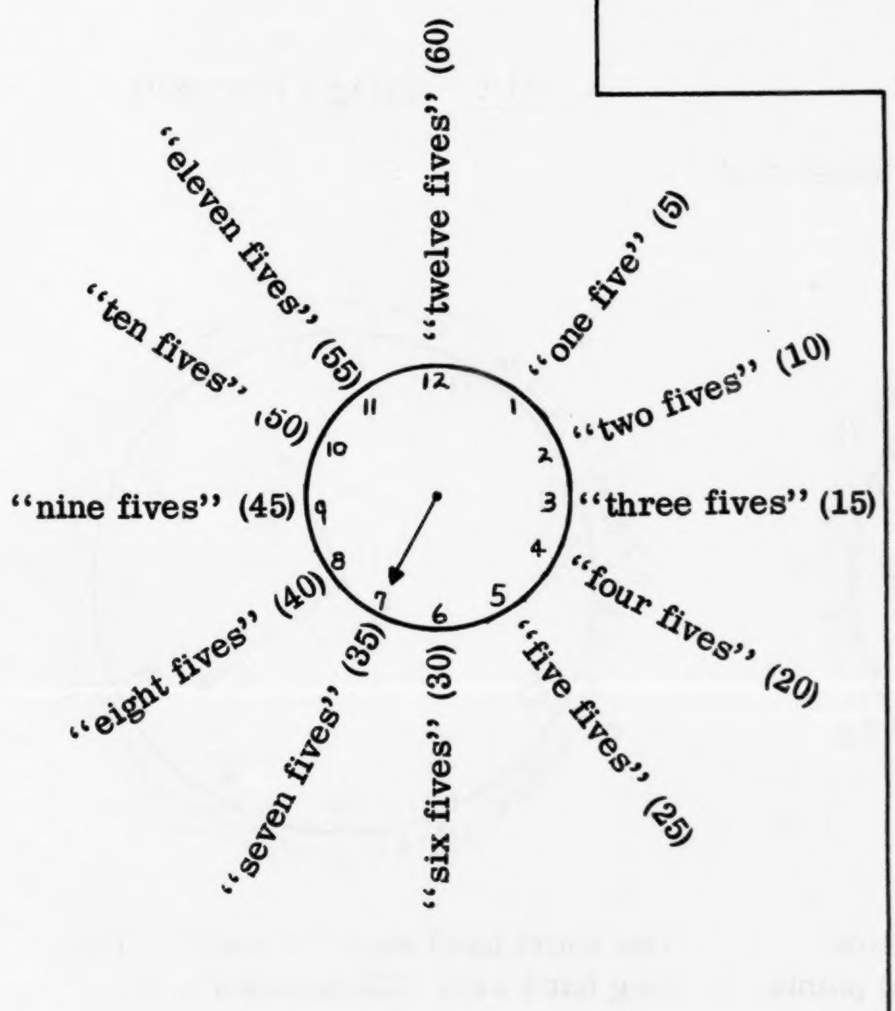
Reading the Short Hand


12
1
2
3
4
5
6
7
8
9
10
11

Short hand tells us the hour "10"

Level II

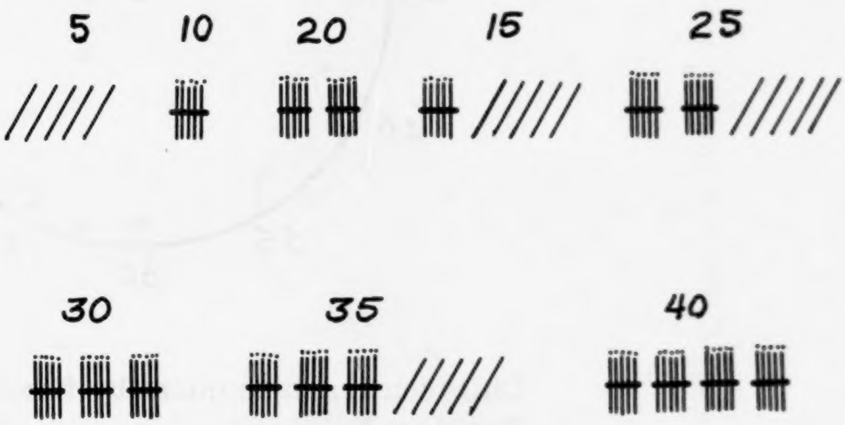
Children use bundles of sticks to find how many minutes each of the twelve numerals on the clock face tells us.

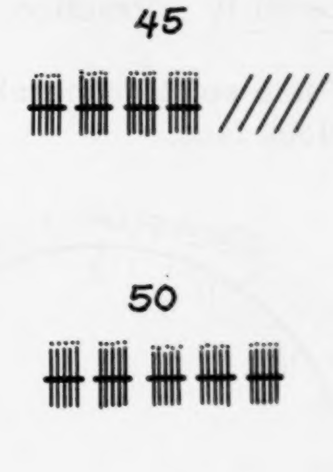

"twelve fives" (60)
"one five" (5)
"two fives" (10)
"three fives" (15)
"four fives" (20)
"five fives" (25)
"six fives" (30)
"seven fives" (35)
"eight fives" (40)
"nine fives" (45)
"ten fives" (50)
"eleven fives" (55)
12
1
2
3
4
5
6
7
8
9
10
11

The long hand tells us the minutes "35"

Level II

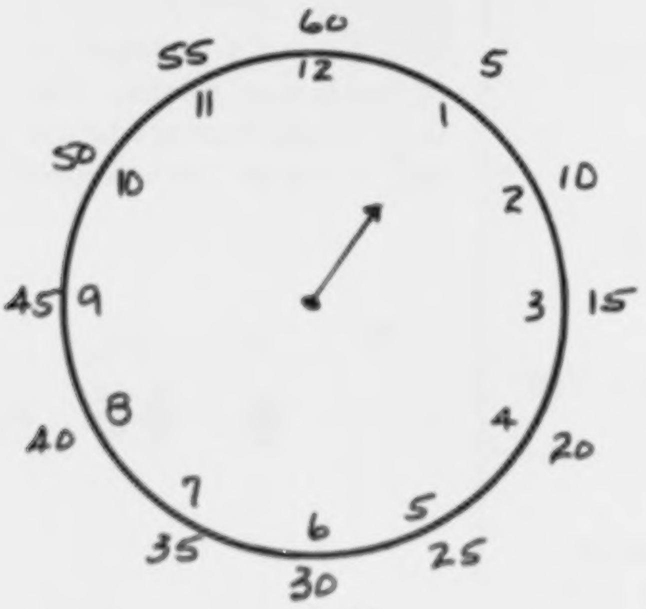
Working out a problem in "telling time" by means of bundles of sticks. The child ties each ten sticks in a bundle and reads the number as so many "tens" and so many "loose ones" (less than 10).


5
10
20
15
25
30
35
40



TELLING TIME THE COMMERCIAL WAY

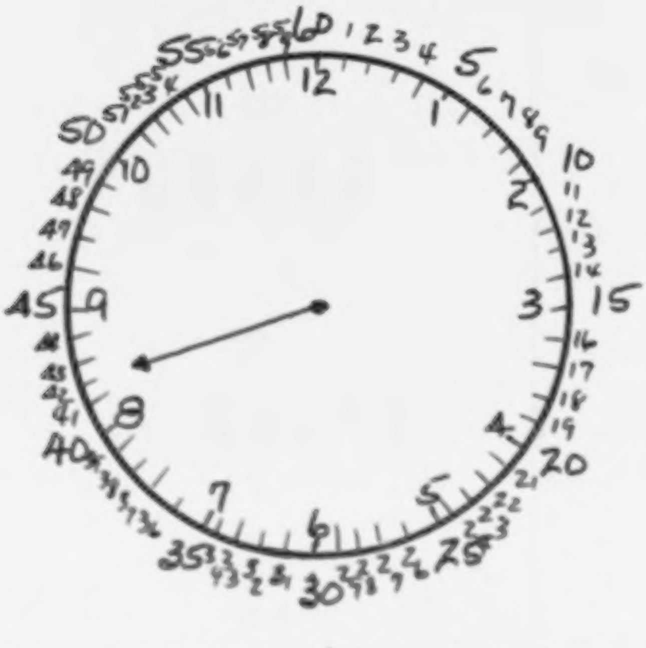
Level III - Practice: Using the long hand to tell time by minutes.


60
12
5
1
10
2
15
3
20
4
25
5
30
6
35
7
40
8
45
9
50
10
55
11

Children learn to count by fives to sixty. (See Step II Problem Solving.)

Level IV - Practice

Paste small numerals 1-60 outside of clock face.


60
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15
20
25
30
35
40
45
50
55
1
2
3
4
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6
7
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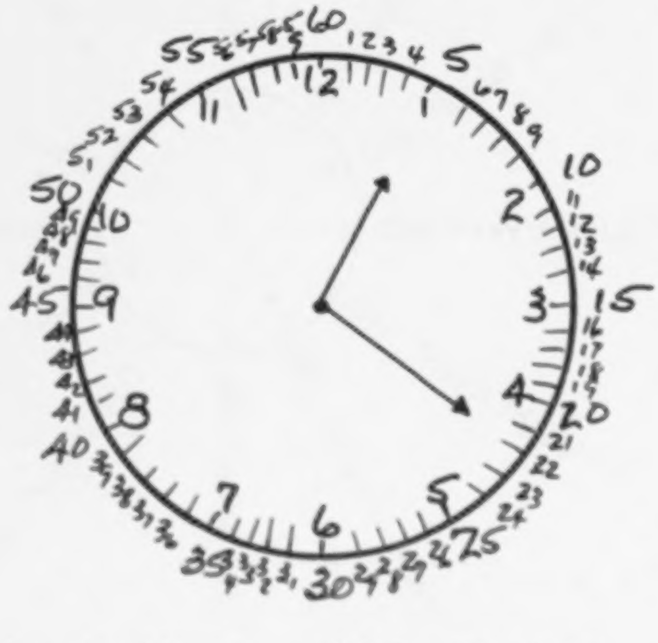
9
10
11

The long hand says "42". Practice recognizing minutes the big hand points to.

Level V - Using a New Skill:


60
12
5
10
15
20
25
30
35
40
45
50
55
1
2
3
4
5
6
7
8
9
10
11

The short hand says "1 hour". The long hand says "22 minutes". We read it and say "one twenty-two". We write it 1:22.

APPENDIX B

SELECTION AND DEVELOPMENT OF A UNIT

Social Studies, Science, Health and Safety Units

Criteria for Selecting a Unit Topic

1. The decision to develop any unit must depend upon the question, "Will this unit contribute to a specific goal and also to a long-range goal for the 'mentally retarded educable' child?" (See pages 315. See also citizenship chart GROWING UP IN A DEMOCRACY attached to back of book.)
2. The material selected should:
   a. Explain the children's experiences in their own environment.
   b. Be of a type which can be related to the present living experiences of the child.
   c. Bring about a widening of the children's interest to include items of social as well as individual need, within the limits of their comprehension and use.
   d. Afford opportunity for application and practice in related activities.

General Principles in Developing a Unit in a Special Class

1. The needs of each individual child should be considered and planned for.
2. Experiences may be differentiated into the following levels:
   a. Actual participation in real life situations.
   b. Observation of real life situations.
   c. Models of real life situations.
   d. Pictures of either real life or imagined situations.
   e. Oral discussion of either real life or imagined situations.
   f. Printed or written accounts of either real life or imagined situations.

   When dealing with situations that are new with the children, their experiences should be mainly of the A-B-C type. When, however, the experiences are familiar to the children, the experiences may be of the D-E-F type.
3. Each child in the class should have equal opportunity to participate but at his own level of achievement.
4. Experiences should be such that certain common elements would be emphasized and their repetition will result in desirable habits, understandings, appreciations and attitudes.
5. The habits, understandings, appreciations and attitudes stressed should be those which will enable the child to meet his responsibilities in the family and as a law-abiding, self-respecting citizen at his own level.

Suggested Teaching Procedures

1. Unit Teaching

   Social studies, science, health, safety, and recreation topics are most effectively taught when the subject matter is organized around a center or core of interest. This type of organization of content is termed a "unit." Interests educationally suitable for development by the teacher into units may be selected from the following:

   a. An individual pupil's interest which will readily spread into a group interest.
   b. A topic in which there is evidenced the interest of a group of pupils.
   c. A favorable reaction of the class to pictures, slides, models and like materials, introduced into the classroom by the teacher, on a topic which is within the ability and experience of the pupils and which furthers one of the goals in education of these children.

2. Types of lessons
   a. Initiation activities

      In the initiation period, the teacher may use pictures, stories, objects, slides, exhibits or may make an excursion for the purpose of interesting the children in the material of the unit. Upon the basis of their reaction to the material and the preliminary discussion, the teacher should decide the extent to which the unit should be developed and would plan her work accordingly.

      Teaching materials used in the initiation period may be used throughout the unit and be supplemented by additional material as needed.

Discussion Procedures

Concrete or illustrative materials used in school and in the children's out of school experiences furnish the topics for discussion. Illustrative materials also serve to stimulate observation and may fix important facts, give additional information, give opportunities for the recall of facts and suggest solutions for problems. The purpose of a discussion lesson is:

1. To clarify ideas.
2. To stimulate new ideas.
3. To correct wrong impressions
4. To share ideas.
5. To furnish additional necessary information.

The discussion lesson furnishes an opportunity for the development of such social traits as listening courteously, speaking in turn, accepting corrections pleasantly, giving suggestions kindly and impersonally. Because it is unwise to attempt to cover any great quantity of material with the mentally handicapped children, short discussion periods should be held frequently to insure understanding and to review facts.

References Procedures

When available reading material is not above the reading level of the children of the class, there is value in reference periods. Care must be taken that the books and stories selected are suitable in interest, vocabulary, sentence structure, and content. They should typically contribute additional information on the topic being discussed.

Constructive Activities

Constructive activities function to advantage in correlating social studies and art activities. Such correlation should not be attempted unless the planned activities contribute definitely to the content of the unit or develop or advance some hand skill at the children's level of manual ability.

Culminating Activities

As the pupils live through the various component parts of a unit, their experiences should enlarge their field of knowledge by developing new concepts and understandings and by clarifying their old concepts. In order that these concepts may be acquired to the limit of the child's capacity, he should have some opportunity to express his ideas in some concrete or tangible form. This expression may take the form of drawing, constructing or making something, collecting, exhibiting or expressing his ideas in written form.

As the result of experiencing each component part of the unit, individuals, groups, or the class as a whole will produce some form of expression which will represent the learning which has taken place during that phase. As a unit progresses and as each part seems to round out the whole, there will come a time when through the guidance of the teacher, the pupils will see how all the parts can be fitted together. All the learnings can be summarized or organized into an activity which will bring the unit to a climix. This becomes a culminating activity of a unit and may result in one of a variety of forms. Depending upon the type of unit, the culminating activity may take the form of an exhibit, dramatization, assembly program, movies, slides, puppet show, party, pageant, broadcast or services to others. This culminating activity serves the child as a kind of summary of new skills, new information, new understandings and appreciations he has experienced in the development of the unit. It organizes and binds all these into a whole that serves as a basis for the next step into the development of a new unit and thereby makes a definite contribution to the child's progress.

SELECTED REFERENCES

General

Abraham, Willard, The Slow-Learner. The Center for Applied Research in Education, Inc., New York, 1967.
Written especially for teachers of the "slow learner" (75-90 I.Q.). It is no less helpful to the teacher of the "educable mentally retarded" (50-75 I.Q.). See especially pages 5-6 Common Misunderstandings about the I.Q. and pages 69-72 Teaching Techniques, some specific advantages of programmed instruction, a list of eight sources of high interest-low ability (vocabulary) reading materials.

Arizona State University, Investigation of Mental Retardation and Pseudo-Mental Retardation in Relation to Bi-Lingual and Sub-Cultural Factors. Tempe, Arizona: The University, 1960.
Of special interest in Hawaii where the language environment of the child is so often not the language of the school books.

Blackman, Leonard S. and Capovianco, Rudolph J., "An Evaluation of Programmed Material with Mentally Retarded Utilizing Teaching Machines," American Journal of Mental Deficiency, September 1965, pages 262-269.

Cassel, Russell N., "Expected Occupational and Personal Development for Five Discernable Groups of Educable but Mentally Handicapped Students," American Journal of Mental Deficiency, May 1961, Vol. 65, No. 6.
See chart on development of 50-80 I.Q. group showing expectations relative to growth of individuals in areas of social, emotional, I.Q., success in developing educational competencies, success in gainful employment as an adult, success in family and community responsibilities.

Clark, Edward T.,"Children's Perception of Educable Mentally Retarded Children," American Journal of Mental Deficiency, March 1964.
A study of fourth and fifty grade children's perception of educable mentally retarded children enrolled in the special class in their school. Modes in which the children perceive and describe EMR children. A thought provoking report for the special class teacher who is guiding the social as well as the academic development of EMR children.

Gangé, Robert M., The Conditions of Learning. Holt, Rinehard and Winston, 1965.
Of special interest to any teacher who is making a professional career of teaching. See especially six steps in learning, page 19, and priority in educational decisions, pages 263-265.

Goldstein, Herbert, "Construction of a Social-Learning Curriculum," a mimeographed paper, 29 pages. Taken from the introduction to the Social Learning Curriculum, Department of Special Education, Yeshiva University, New York, N.Y.
Every teacher of "educable mentally retarded" children needs to make a careful study of this paper. It will serve as a valuable aid in planning and carrying out a social-learning curriculum. Special attention and study should be given to figures 1, 2, 3, 4 and the interpretation of each. A careful study of this paper will contribute toward a fuller understanding of the chart attached to the back of this guidebook, Growing Up in a Democracy.

Goldstein, Herbert, "Planning for the Educable Mentally Retarded, "NEA Journal, May 1964.

Ingram, Christine P., Education of the Slow Learning Child, Third Edition, New York, Ronald's Press.

A pioneer in education of the mentally handicapped, this author joins those newer to the field in pointing out the need to study all the other factors that affect learning and not relying on M.A. and I.Q. alone. She points out also the retarded child's need for special education to enable him to meet the ordinary social and economic requirements of home and community as an adult citizen. See especially basic goals, page 60.

Inhelder, Barbel, with prefaces by Piaget, G., The Diagnosis of Reasoning in the Mentally Retarded, New York, the John Day Company, 1968.

A different approach to measuring a child's intelligence written primarily for psychologists, a thought provoking book for the teacher who is making a career of working with and studying the mentally retarded child.

Kirk, Samuel A., Early Education of the Mentally Retarded, Urbana, Illinois, The University Press, 1960.

Kirk, Samuel A., Teaching Reading to Slow-Learners, Boston, Houghton-Mifflin, 1940.

Kirk, Samuel A., and Johnson, G. Orville, Educating the Retarded Child, Boston, Houghton-Mifflin, 1961.

Kirk, Samuel A. and Wiener, Bluma B., Editors, Behavioral Research on Exceptional Children. Washington Council for Exceptional Children, NEA, 1963.

Lee, Doris M., Diagnostic Teaching. NEA, 1966.

McCarthy, James J., "The Importance of Linguistic Ability in the Mentally Retarded," Mental Retardation, April 1964, pages 28-31.

"Increase in linguistic ability may produce an increase in intellectual ability." Suggest types of exercises that require "thinking in words" analogies, reasoning problems, riddles, jokes, word meanings, etc.

McCoy, George F., "Some Ego Factors Associated with Academic Success and Failure of Educable Mentally Retarded Pupils," Exceptional Children, October 1963.

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Nelson, Calvin C., "Developing a Positive Self-Concept in the Mentally Retarded," Mental Retardation, February 1963, pages 28-31.

Phillips, E. Lakin, Wiener, Daniel N. and Haring, Norris G., Discipline Achievement and Mental Health, a teachers guide to wholesome action. Prentice-Hall, Inc., Inglewood Cliffs, New Jersey, 1960.

The special class teacher has a very special need for this book. 187 pages of sound, practical classroom guidance for the teacher of "any child no matter the age of the child, no matter his ability, his limitation or assets." This applies to the educable mentally retarded child as well as to the normal child.

President's Panel on Mental Retardation, Report of Task Force on Education and Rehabilitation, U.S. Department of Health, Education and Welfare, Superintendent of Documents, Government Printing Office, Washington, D.C. 20402.

Takes note of the growing tendency to depart from the position that mental retardation is static, irreversible and incurable "it is possible that the entire concept of mental retardation has to be redefined" and that "mental retardation is a complex, multi-dimentional phenomenon still needing much to be learned about the retardate." "For educable a developmental program based on prognosis for social and occupational independence." "Program involves....unique teaching materials and techniques and curricular adaptations." The need for instructional material centers is emphasized.

Price, James E., "Automated Teaching Programs with Mentally Retarded," American Journal of Mental Deficiency, July 1963, pages 69-72.
A research project which showed no difference in amount done but machine groups required considerably less time compared to conventional teaching groups.

Weber, Elmer, Educable and Trainable Mentally Retarded Children, Springfield, Illinois, Charles C. Thomas, Publisher, 1962.
Written with the specific needs of a new teacher in mind, this describes in detail plans, methods and materials to use with educable retarded children and the expected outcomes from this teaching. Covers primary, elementary and secondary levels including suggestions for carrying out a school-work-experience program, pages 138-232.

Wolinsky, Gloria S., "Piaget and the Psychology of Thought: Some Implications for Teaching the Retarded," American Journal of Mental Deficiency, September 1962, pages 250-256, Vol. 67, No. 2.
The need for the teachers clinical approach as one of inquiry and analysis of child's response. The need to analyze what she teaches in terms of the stage at which the child is operating.

Reading References

Bernstein, Bebe, Readiness in Reading for the Retarded Child, New York, The John Day Company, 1965.
Written especially about the young mentally retarded educable child at the lower end of the scale (50-60). With the same careful sequence of lessons, the teacher can develop material for older or for higher level mentally retarded educable children. Contains list of films, book titles for reluctant readers and stories to read to children.

Bernstein, Bebe, Everyday Problems and the Child with Learning Difficulties, The John Day Company, New York, 1967.
With specific short and long range goals; works within child's everyday environment, looks ahead to prepare him for adult life. See especially situation problems, pages 36-133, concept problems, pages 135-147, applied information problems, pages 149-159.

Cawley, John S., "Word Recognition Performance of Mentally Handicapped and Average Children: Implications for Classroom Diagnosis," Mental Retardation, June 1968.
A study which points out the need to provide reading material that will minimize errors thereby increase child's feeling of success and permit teacher to diagnose special needs for structural and phonetic analysis.

Cawley, John S., "Identifying Reading Problems of the Underachieving Mentally Retarded Child," The High School Journal, 1964, pages 166-172, Vol. 48.

Fernald, G. M., Remedial Techniques in Basic School Subjects, New York, McGraw-Hill, 1943.
While Fernald's reading method is commonly known as a "kinesthetic"

method, there are other characteristics of the procedure whose values overshadow its kinesthetic value. To the child of the Hawaiian Islands, it offers a daily experience in "thinking" in English, the natural outcome of which should be that he will speak good English.
Reading begins with the child's own ideas which he writes and later reads in print; thus combining typical school subjects into one activity (thinking, speaking, writing, and reading) and so providing a natural continuity of activities within the school day. This method offers a contribution to education of the retarded child in Hawaii that is important enough to make it worthwhile to work out the necessary mechanics of using it.

Jordon, Laura, "Reading and the Young Mentally Retarded Child, "Mentally Retardation, Vol. I, February 1963, pages 21-27.
Presents a rationale for the use of experience rather than the basal reader method for introducing reading to young educable retarded children.

Lee, Doris M. and Allen, R. V., Learning to Read Through Experience, Second Edition, Appleton Century Company, New York, 1963.
A reading readiness program where the child learns that reading is communication. "What he thinks he can talk about; what he talks about can be expressed in drawing, painting and writing," Written for teachers of "normal" children but readily adapted for use with "educable retarded" children. See especially language experiences in reading development, a good learning environment, diagnostic teaching, group and individual activities.

Newfeld, Rose, Reading Fundamentals for Teenagers, New York, John May Company, 1964.
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Arithmetic References

Clark, John R. and Eads, Laura K., Guiding Arithmetic Learning, Yonkers-on-Hudson World Book Company, 1954.
Written to meet the needs of "normal" children but equally useful for teaching the retarded child. Emphasis is on meaning and relationships; skills are developed after understanding; emphasis on discovery, introduces symbols (numerals) as records of experience, development of concepts and generalizations understood to be an on-going process. Points out that children progress through sequences at different rate of speed; considers carefully the emotional well-being of the learner as well as his growth in ability to do quantitative thinking.

Holt, John P. "A Project in Presenting Mathematical Concepts to Educable Retarded Students," Mental Retardation, October 1963, pages 281-285.
Describes development of a unit "Where We Live" that involves each child in drawing a map of "How I Get to School"; culminated in a composite map showing routes of entire class.

Wilson, Guy, assisted by Stone and others, Teaching the New Arithmetic, New York, McGraw-Hill, 1951, Second Edition.
This book was written for the normal child who hates arithmetic. Of chief interest to the special class teacher is the unique method by which the 100

facts in each of the addition, subtraction, and division processes are organized into ten groups of ten each (5 and their reverses). Mastery of each group leads to dealing with amounts that involve not only the simple combination but also tens, hundreds, thousands, etc. See pages 105, 144, 159, 182 for these groupings. It is not necessary for the special class teacher to duplicate these groupings. It is the idea of mastering a few facts and then immediately using them over and over again in larger amounts in various real life situations that is important. This removes the traditional "flashcard" combinations from the category of "babystuff" and gives the retarded child a real life reason for learning the combinations.

Wilson recommends initial teaching of the division process by the long division method not using the "short division process." It saves a great deal of the educable retarded child's limited learning time if he is required to learn to use only one method for division.

Recreation, Physical Education, Audio-Visual and Teaching Aids

Abraham, Willard, The Mentally Retarded Child and Educational Films, Coronet Films, 1966.

Carlson, Bernice, Wells and Ginglend, Play Activities for the Retarded Child, New York, Addington Press, 1961.
How to help him grow and learn through music, games, handicraft and other play activities. Activities for children of six-year mental age or below are divided according to five key areas of development: mental health, social, physical, language and intellectual.

Driscoll, John., "Educational Films and the Slow Learner," Mental Retardation, June 1968.
Research in response to feelings expressed by some teachers that the speed and complexities of sound films were too great to be of value to mentally retarded children.

Goldstein, A.M., Selected Audio-Visual Instruction for Mentally Retarded Pupils, Springfield, Illinois, Charles T. Thomas, Publisher, 1964.
See especially "cone of experience" page 6 and Olsen's pyramid, page 8, for steps from experience to abstract symbols. Author discusses the type of film most successfully used with mentally retarded. Recommends concrete rather than abstract content, use of film as a summary to a specific lesson. Lesson plan for unit on serving foods, bibliography of 16mm films for educable retarded children at junior and senior high school level are included.

Scott, Mary D., Creative Ways of Teaching the Mentally Handicapped, Special Services Branch, Office of Instructional Services, Department of Education, State of Hawaii, 1966.
Written especially for "trainable" retarded children, many of the activities will be valuable when used as described or adapted for use with "educable" children. See especially physical education games described and illustrated in Part II.

Stein, Julian, "A Practical Guide to Adapted Physical Education for the Educable Mentally Retarded," Journal of Health, Physical Education, Recreation, Vol. 33, December 1962.

A Resource Guide for Special Education T
Working with the "Mentally Retarded Educa

GROWING UP IN A DE

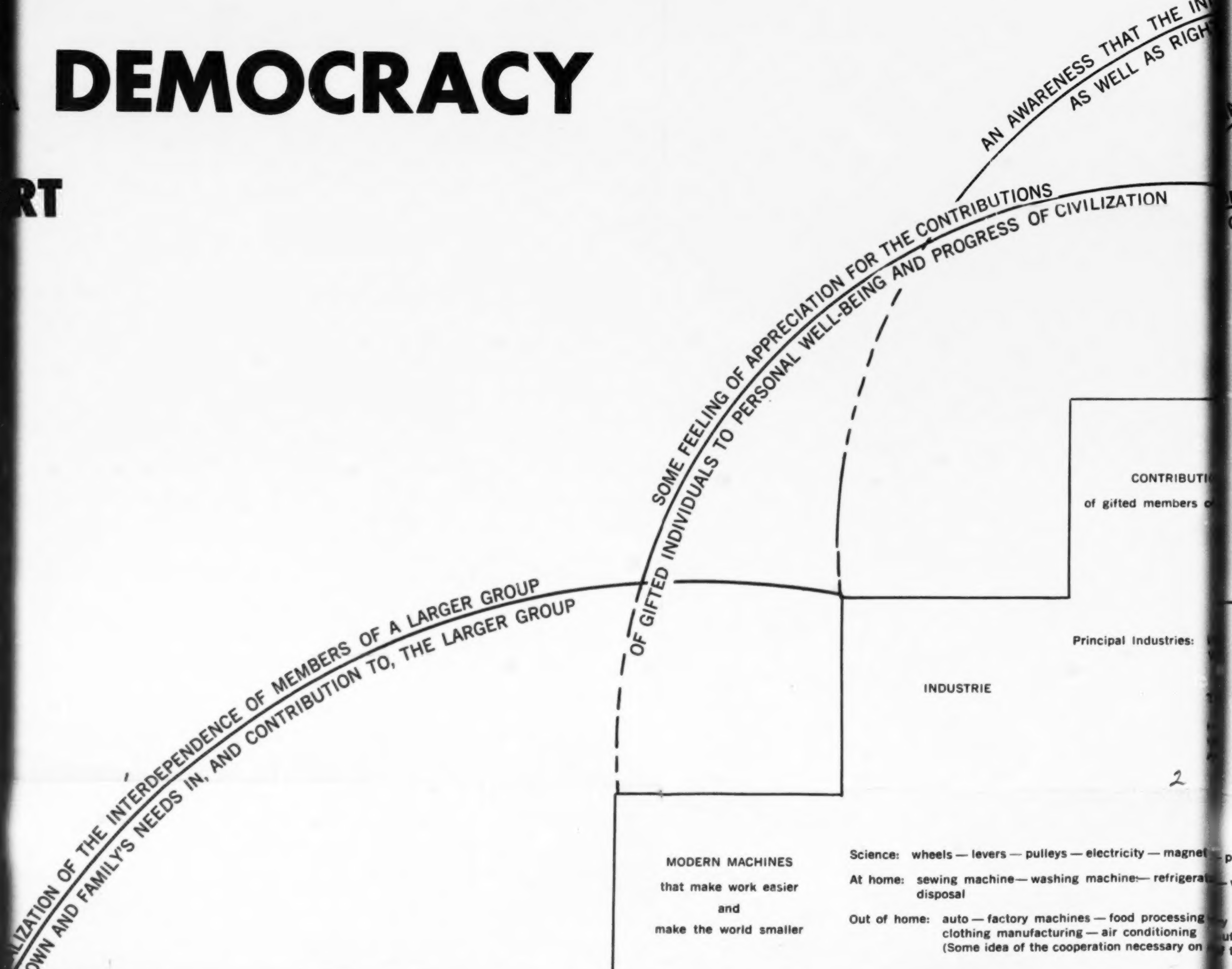
A CITIZENSHIP CHART

REALIZATION OF THE INTERDEP
OWN AND FAMILY'S NEED

ducation Teachers
ded Educable” Child

DEMOCRACY

RT



LIZATION OF THE INTERDEPENDENCE OF MEMBERS OF A LARGER GROUP

OWN AND FAMILY'S NEEDS IN, AND CONTRIBUTION TO, THE LARGER GROUP

SOME FEELING OF APPRECIATION FOR THE CONTRIBUTIONS

OF GIFTED INDIVIDUALS TO PERSONAL WELL-BEING AND PROGRESS OF CIVILIZATION

AN AWARENESS THAT THE IN

AS WELL AS RIGHT

CONTRIBUTI

of gifted members o

Principal Industries:

INDUSTRIE

2

MODERN MACHINES

that make work easier

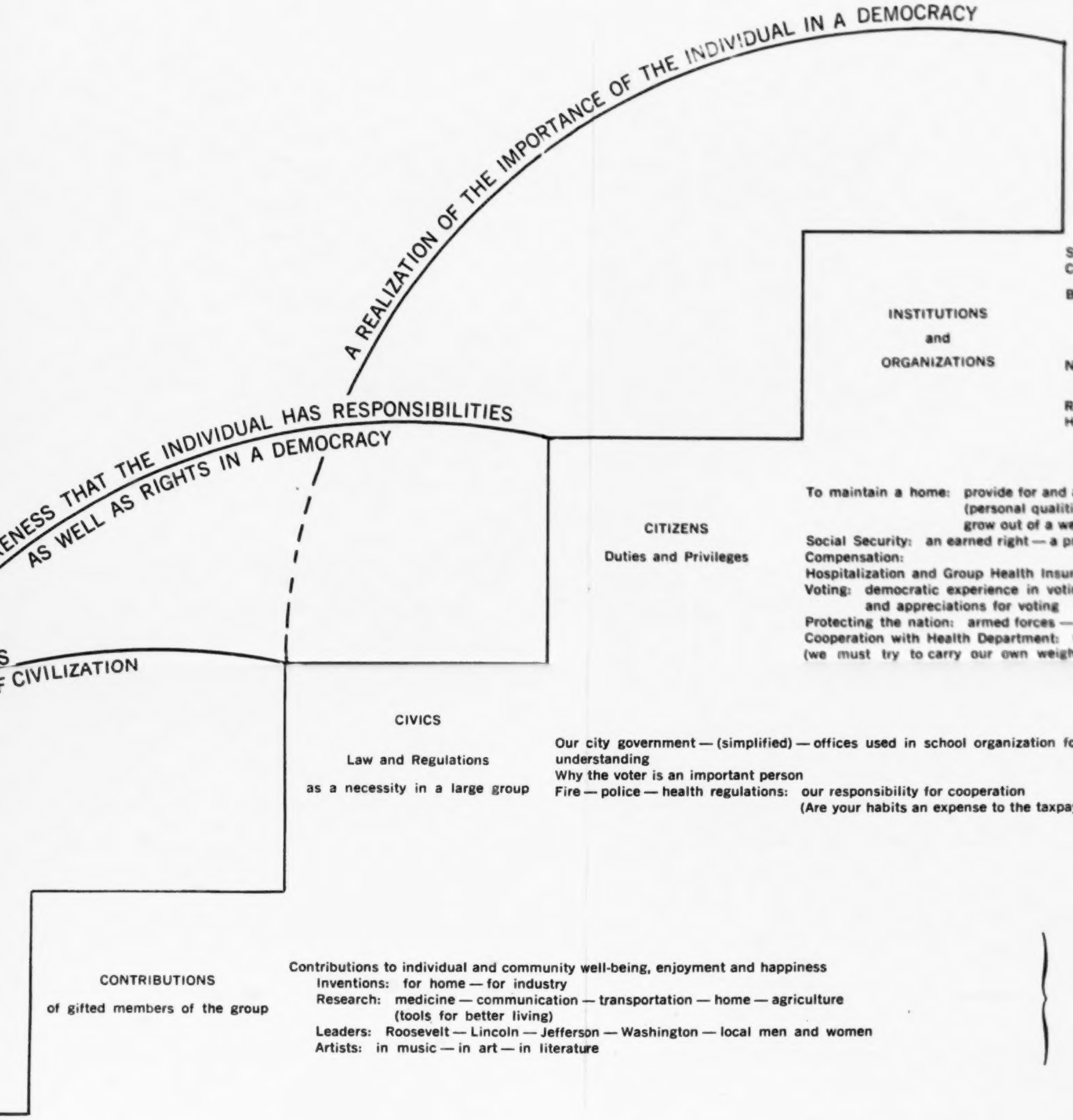
and

make the world smaller

Science: wheels — levers — pulleys — electricity — magnet

At home: sewing machine— washing machine— refrigera
disposal

Out of home: auto — factory machines — food processing
clothing manufacturing — air conditioning
(Some idea of the cooperation necessary on



A REALIZATION OF THE IMPORTANCE OF THE INDIVIDUAL IN A DEMOCRACY

ENESS THAT THE INDIVIDUAL HAS RESPONSIBILITIES
AS WELL AS RIGHTS IN A DEMOCRACY

S
F CIVILIZATION

FOUR FREEDOMS

INSTITUTIONS
and
ORGANIZATIONS

School: reason for — purpose for
Church: guidance for daily living

Boy Scouts — Girl Scouts — Y.M.C
gro
rela
rec

Neighborhood Organizations: pro
fam

Recreation Department: commun
Health Department — Red Cross:

CITIZENS
Duties and Privileges

To maintain a home: provide for and assume responsibility
(personal qualities necessary for getting and hol
grow out of a well-balanced home life)
Social Security: an earned right — a product of a democratic society
Compensation:
Hospitalization and Group Health Insurance: problem in economics
Voting: democratic experience in voting on classroom and school qu
and appreciations for voting
Protecting the nation: armed forces — a duty of citizenship
Cooperation with Health Department: we protect others — others
(we must try to carry our own weight in the community)

CIVICS
Law and Regulations
as a necessity in a large group

Our city government — (simplified) — offices used in school organization for better working and understanding
Why the voter is an important person
Fire — police — health regulations: our responsibility for cooperation
(Are your habits an expense to the taxpayer?)

CONTRIBUTIONS
of gifted members of the group

Contributions to individual and community well-being, enjoyment and happiness
Inventions: for home — for industry
Research: medicine — communication — transportation — home — agriculture
(tools for better living)
Leaders: Roosevelt — Lincoln — Jefferson — Washington — local men and women
Artists: in music — in art — in literature

RESPONSIBILITY (
HIS OWN BEST CC

Principal Industries: in our locality (see Sources of Food, Clothing, Shelter) on the islands
Where are products consumed?
Home? Mainland? Other Countries?

Transportation of local products — of exports — of imports.
Barges, Motor trucks, Air freight, Steamships — container and bulk freight
Industrial safety devices — the men who invented and the men who insisted on their adoption
Automobile safety devices

A DEEPENING SENSE OF THE BROTHE
PEOPLE LIKE OURSELVES IN OTHER
BOTH GIVE US HELP AND NEED OU

2

leys — electricity — magnet — refrigeration
shing machine— refrigerator — vacuum cleaner — dishwasher —
achines — food processing — canning — transportation facilities —
cturing — air conditioning
e cooperation necessary on an assembly line)

AN APPRECIATION OF THE NEED OF GROUP COOPERATION
IN OPERATING MODERN MACHINERY

Freedom from fear: racial equality — religious equality
from want: the right to a job (study of available jobs at capacity level of pupils)
ions of speech: develop ability to make one's self understood — knowledge of courteous forms of address — ability to write simple letter
of assembly: labor unions to protect the rights of employees
community meetings to obtain benefits for group
mass meetings and political rallies.

Working understanding of budgeting of time and money — of ethics of present day society

purpose for children — opportunities for adult education
daily living — upholding ideals — comfort and refuge

uts — Y.M.C.A. — Y.W.C.A. — Girl Reserves:
group participation in good human
relationship and wholesome
recreation

ations: provide a meeting place for discussion, instruction and relaxation for
family groups

: community supported for individual or group recreation
Red Cross: working knowledge of — nutrition — physiology

A READINESS TO FIND ONE'S PLACE
IN THE COMMUNITY, ACCEPT
RESPONSIBILITIES OF CITIZENSHIP,
DEMAND OWN RIGHTS, HELP PROTECT
RIGHTS OF OTHERS

ing and holding a job

ic society

conomics
school questions provides foundations

— others protect us

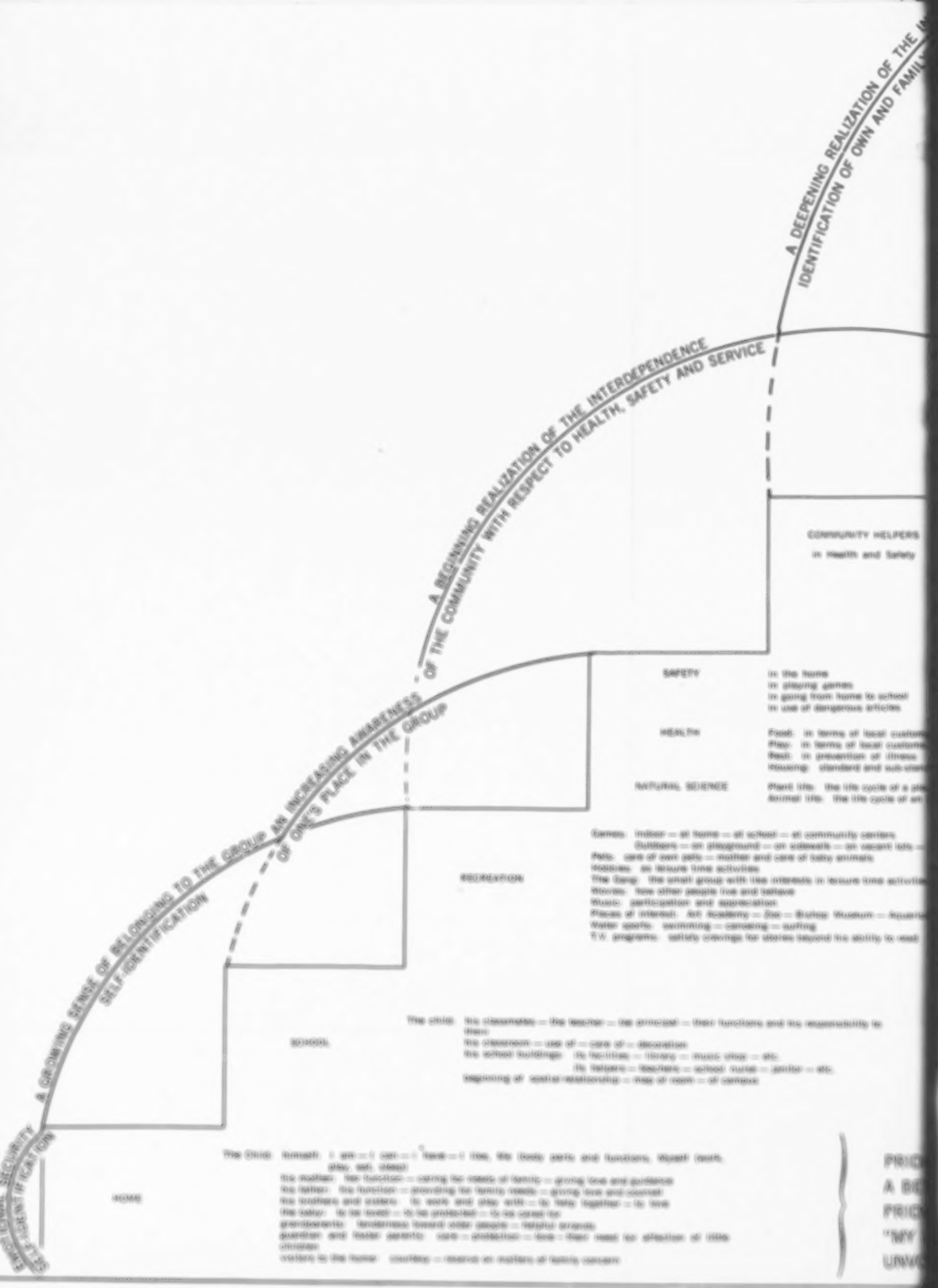
A SENSE OF THE IMPORTANCE OF OUR OWN HEALTH, OWN
INTEGRITY, OWN SOCIAL EFFICIENCY TO THE COMMUNITY

A BEGINNING REALIZATION THAT COOPERATION IS A CIVIC
RESPONSIBILITY

BILITY OF THE INDIVIDUAL FOR MAKING
BEST CONTRIBUTION TO THE GROUP

BROTHERHOOD OF MEN, THAT
OTHER PARTS OF THE WORLD
ED OUR HELP

AN AWARENESS OF OUR POWER OVER LIVING AND NON-LIVING



A DEEPENING REALIZATION OF THE IN

IDENTIFICATION OF OWN AND FAMIL

A BEGINNING REALIZATION OF THE INTERDEPENDENCE OF THE COMMUNITY WITH RESPECT TO HEALTH, SAFETY AND SERVICE

COMMUNITY HELPERS

in Health and Safety

AN INCREASING AWARENESS OF ONE'S PLACE IN THE GROUP

SAFETY

in the home
in playing games
in going from home to school
in use of dangerous articles

HEALTH

Food: in terms of local custom
Play: in terms of local custom
Rest: in prevention of illness
Housing: standard and sub-stan

NATURAL SCIENCE

Plant life: the life cycle of a pl
Animal life: the life cycle of an

RECREATION

Games: Indoor = at home = at school = at community centers
Outdoors = on playground = on sidewalk = on vacant lots =
Pets: care of own pets = mother and care of baby animals
Hobbies: as leisure time activities
The Gang: the small group with like interests in leisure time activitie
Movies: how other people live and behave
Music: participation and appreciation
Places of interest: Art Academy = Zoo = Bishop Museum = Aquari
Water sports: swimming = canoeing = surfing
T.V. programs: satisfy cravings for stories beyond his ability to read

A GROWING SENSE OF BELONGING TO THE GROUP

SELF-IDENTIFICATION

SCHOOL

The child: his classmates = the teacher = the principal = their functions and his responsibility to them
his classroom = use of = care of = decoration
his school buildings: its facilities = library = music shop = etc.
its helpers = teachers = school nurse = janitor = etc.
beginning of spatial relationship = map of room = of campus

EMOTIONAL SECURITY

SELF-IDENTIFICATION

HOME

The Child: himself: I am = I can = I have = I like, his body parts and functions, Myself (teeth, play, eat, sleep)
his mother: her function = caring for needs of family = giving love and guidance
his father: his function = providing for family needs = giving love and counsel
his brothers and sisters: to work and play with = to help together = to love
the baby: to be loved = to be protected = to be cared for
grandparents: tenderness toward older people = helpful errands
guardian and foster parents: care = protection = love = their need for affection of little children
visitors to the home: courtesy = reserve on matters of family concern

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UNIV

REALIZATION OF THE INTER

TION OF OWN AND FAMILY'S NEEDS

MODERN MACHINES

that make work easier

and

make the world smaller

Science: wheels — levers — pulleys — electricity —

At home: sewing machine — washing machine — re
disposal

Out of home: auto — factory machines — food pro
clothing manufacturing — air conditi
(Some idea of the cooperation necess

SOURCES OF FOOD,

CLOTHING AND SHELTER

Farmer: garden produce — poultry — rice — taro — fruits — hog raising
Plantation: pineapple — sugar — coffee — macadamia nuts
Ranch: cattle — sheep
Fisheries
Dairy

Building materials: locally — cement — lava rock; imported — lumber — steel — brick — e
Clothing and materials: local — imported from mainland — other countries
Science: plant — animal life — sea life

COMMUNITY HELPERS

Stores and Services

Grocer
Butcher
Vegetable stand
Fruit stand
Milkman
Baker

Postman

Gas and electricity
Telephone
Water Supply
Transit Company

Carpenter
Plumber
Painter
Electrician

Drug store
Furniture store
Department store

Dry Cleaner
Service station
Laundry

Paper boy

(The local community: map showing locations of school — stores — services)

A DAWNING SENSE
AN AWARENESS OF
THE COMMUNITY

MMUNITY HELPERS

Health and Safety

Hospitals: functions — services — rates — locations — etc. — doctors and nurses
Clinics: free and pay
Physicians and Surgeons: special kinds of services — how to locate in telephone directory
Board of Health: protection of community health — a service for all
Welfare: services to the community (supported by the community)

Policeman: protection of property — of persons — directing crowds — enforce laws made by community
Fireman: saves property and lives — common fire regulations — equipment — etc.
Street cleaner: need for sanitation — for keeping our city beautiful
Park keeper: parks for beauty and for recreation
Recreation workers: in public parks and on beaches — Y.M.C.A. — Y.W.C.A.

games
m home to school
ngerous articles

rms of local customs
rms of local customs
evention of illness
andard and sub-standard housing—local customs

the life cycle of a plant — nutritive value of plants to man and animals
the life cycle of an animal — animals as food, pets and helpers

A BEGINNING SENSE OF THE ORDERLINESS OF THE UNIVER

munity centers
— on vacant lots — parks — public beaches
animals

leisure time activities

Museum — Aquarium

the ability to read

FAIR PLAY. PRIDE IN THE COMMUNITY
THE BEGINNINGS OF GOOD HUMAN RELATIONSHIP;
APPRECIATION OF NEED FOR RULES OF CONDUCT IN A GROUP;
IMPORTANCE OF TEAMWORK; AND RELATIONSHIP BETWEEN
PERSONAL HEALTH AND RECREATION

nsibility to

s.

PRIDE IN MEMBERSHIP: "MY GROUP" "MY CLASS" "MY SCHOOL"

PRIDE IN HIMSELF AS A PERSON
A BEGINNING SENSE OF POWER — SELF CONFIDENCE
PRIDE IN MEMBERSHIP; "MY MOTHER" "MY FATHER"
"MY SISTERS AND BROTHERS" "OUR BABY"
UNVOICED BEGINNINGS OF LOYALTY AND COURTESY

A

— electricity — magnet — refrigeration

g machine— refrigerator — vacuum cleaner — dishwasher —

nes — food processing — canning — transportation facilities —
ng — air conditioning
operation necessary on an assembly line)

AN APPRECIATION OF THE NEED OF GROUP COOPERATION IN OPERATING MODERN MACHINERY

teel — brick — etc.
s

DEPENDENCE ON UNIVERSAL LAW FOR FOOD, SHELTER AND CLOTHING

NG SENSE OF BROTHERHOOD
ENESS OF OUR COMMON NEED FOR EACH OTHER IN
MUNITY

HE UNIVERSE

Informati
child cli
periences
democra

ON

AN AWARENESS OF OUR POWER OVER LIVING AND NON-LIVING THINGS AND OF OUR RESPONSIBILITY FOR USE OF POWER

Information, understandings and appreciations that emerge as the child climbs the steps toward citizenship through direct learning experiences, directed observation and day-by-day living together in a democratic school community.

DEPARTMENT OF EDUCATION
OFFICE OF INSTRUCTIONAL SERVICES
SPECIAL SERVICES BRANCH
STATE OF HAWAII
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